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Biography

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MANHATTAN
KANSAS

PROFESSOR THOMAS W. M. CAMERON, M.A., D.Sc., Ph.D., M.R.C.V.S.

In the realm of science all countries are alike ; and in being transferred to the McGill University of Canada, as Director of the Institute of Animal Parasitology, Dr. Cameron's brilliant career will be continued, and we are thankful that he still continues to serve under the flag of our Empire.

Before graduating from the Royal (Dick) Veterinary College in 1921, Mr. Cameron had started in Glasgow in 1912 with the intention of graduating in human medicine. Like many more, the War broke into his studies, and after demobilisation he decided to specialise with the idea of becoming a veterinary parasitologist.

How well Dr. Cameron has succeeded in climbing right to the top of the tree is well known to all veterinarians. In this he has been unselfishly encouraged and ably backed by that *doyen* of parasitological research, Professor Leiper, F.R.S., whose pupil and assistant in London Dr. Cameron has been for several years. His researches have been undertaken in various parts of the world, and the work which he did in the West Indies in 1928 bore good fruit, not only for veterinary but also for human parasitic problems. His writings include many articles on parasitology in our veterinary periodicals, the section dealing with this subject in Black's " Veterinary Dictionary," and a book on " Animal Diseases Transmissible to Man."

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When recalled to Scotland, about two years ago, Dr. Cameron accepted a Professorship in which the main object was to start a new Department of Comparative Parasitology in the Edinburgh University and the Royal (Dick) Veterinary College, and it was upon this task that he was engaged when the offer came for him to take the Chair of Research in Parasitology in the University of McGill. However, wherever Thomas Cameron is fixed is of no consequence whatever, for his work will go on just the same, and veterinary science will benefit equally wherever he may be. His British colleagues on this side of the water wish him long life and good health to do well in the fight which he has undertaken against all ruthless parasitic pests of human, as well as veterinary, subjects.

Editorial

ANIMAL CHARITIES.

"ANIMAL charities," which appears in this month's issue, sets one to think where the *true* kindness to the sick and helpless animal really lies, and whether amateur diagnosis does not often lead to additional suffering instead of easing it. *Before one can give relief to suffering one must have some true idea as to what is the cause, and this is where the man of trained experience comes in, for this training cannot be acquired in a few days, or even months.*

The veterinary student is not only intelligent, but usually enters upon this career from an instinctive love of the work, and even he cannot qualify to diagnose and practice under five years. He will admit that his knowledge is small; but how much more must it be than that of the empiric or charlatan who has been in training only for a few weeks or even months. The idea will not bear contemplation. *In fact it is not only absurd, but cruel to the sick animals who come up to be experimented upon—for that is what it really is.* Ignorant, but perhaps well-meaning, the empiric may do his best, and in simple cases the patient may recover; but how many animals have mal-diagnoses and much suffering in consequence? The reply is "thousands," *and their fate is either the lethal chamber or a prolonged and perhaps painful illness which might all have been saved by proper professional advice.* On behalf of the sick animal one pleads for fair treatment. Let the Animal Humane Societies support this claim and see that in so far as they are concerned the veterinary work is done by the veterinary surgeon. These animal societies who carry on veterinary treatment without qualified veterinary advice are often in reality (although no doubt unintentionally) cruel offenders in this direction.

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General Articles

CANINE DEPARTMENT OF THE ALFORT SCHOOL.*

By M. le Prof. V. ROBIN.

IT has hardly been recognised what an important advance has been made in the pathology of the smaller animals during the past twenty years.

Before the War veterinarians were only exceptionally interested in the maladies of the dog. In the large towns the situation was about the same. Notably in Paris the treatment of house animals was only carried out by a few more or less authorised specialists. The times have changed. In spite of the difficulties of life, notwithstanding the strictness of police regulations and the hostility of house owners and landlords, the number of dogs in the towns has markedly increased, as the following statistics for Paris will show :—

Dogs licensed in the Department of the Seine :—

1890	...	...	...	...	125,098
1900	...	...	...	...	140,948
1910	...	...	...	...	191,909
1920	...	...	...	...	142,009
1930	...	...	...	...	230,674

Besides, the preference for pure-bred animals of wide origin has grown among the public. Some breeds almost unknown before the War, such as English terriers, dachshunds and chows, have acquired extraordinary favour. Dog shows have become more and more numerous, and certain exhibitions of dogs have constituted as great an attraction as the academy pictures.

Notably, also in Paris, the disappearance of horse traction has not led to any considerable diminution of the number of veterinarians, and specialised clinics in the doctoring of small animals, sometimes luxuriously equipped, have multiplied in all quarters of the capital. It is usually the same in the large provincial towns. Finally, in the country, huntsmen and dog amateurs, better informed, have progressively got the habit of calling in the veterinary surgeon, often with great success, in the prophylaxis and treatment of illnesses.

At the same time it has been recognised that the rearing of dogs of pure breed, formerly considered a whim, a distraction, or a sport, can be made a paying proposition. Without wishing to exaggerate the economic importance of such a zootechnic production, evidently due to momentary caprice, it was found that in 1925 the value of exported English dogs reached the sum of 650 million francs.

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The pathology of the dog does not constitute only a professional speciality of growing importance. Its study, under excellent conditions, allows of the

* From *Revue Générale Médecine Vétérinaire*, November 15, 1931.

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initiation of the student in practical medicine. The much-increased number of ailing animals presented for examination at the schools, the variety and complexity of the pathological states, the handling of patients, give great teaching facilities for the interpretation of clinical facts, the rationale of diagnosis and the discussion of the applied therapy. When the medical tuition of the student is thus commenced, it becomes easy to perfect it and adapt it to the somewhat different pathology of other breeds of animals.

Besides, there is a great interest in canine medicine from the point of view of experimental and comparative pathology. Experimenters produce in the animal, and above all in small animals, organic alterations, and study the results with a view to benefiting human medicine. In this respect the study of spontaneous animal maladies, and of the dog particularly, appears markedly most profitable; and there is no doubt that a comparative examination of human and canine pathology will furnish all the necessary instruction in physio-pathology and general pathology. Doctors, however, have for some time understood the interest of such researches, and more or less numerous workers—ophthalmologists, neurologists, radiologists—do not hesitate to come to Alfort to study in the dog morbid states which in man have still an obscure ætiology, or of which the therapy is uncertain.

Some years before the War, it was already contemplated to replace the out-of-date kennels of Alfort by a more modern equipment. A very important project had been studied, but its realisation could not be brought to fruition owing to lack of funds. In 1927 Monsieur Leclainche obtained from Minister Queville the insertion in the finance laws of a clause allowing the veterinary schools to benefit from the resources of the *Pari-mutuel* to the same extent as the agricultural schools. Parliament accepted this proposition, and the Commission for the division of funds allotted to the Alfort School a provisional credit of 15 million francs, destined for buildings or equipment considered necessary. A general plan was drawn up by the Director, Professor Nicolas, and the first thing completed was a medical service attached to a largely increased and modernised kennel accommodation.

This new service has been constructed on plans by M. Emile Blois, Chief Architect of the Beaux Arts, who has welcomed our suggestions with incomparable good will. On the other hand, M. Maitrot, Inspector-General on the rural side, charged with the control of the utilisation of the funds of the *Pari-mutuel*, has shown great interest in the numerous technical problems which crop up in a creation of this nature, and has collaborated earnestly and valuably with us. Commenced at the end of 1927, the building was entirely finished 18 months later; the service was inaugurated by M. Jean Hennessy, Minister of Agriculture, on the occasion of the Veterinary Meeting of 1929. It has, therefore, been functioning over two years.

Erected in the centre of the new park of the School, it occupies an area of about 3,000 square metres, and is composed of pavilions in light brick and

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cement, very simple alignment, following modern æsthetical architecture. These buildings only admit of a ground floor, and are covered with a flat and easily accessible roof. The service is divided into two parts, separated by interior courts, with a connection by means of windowed passages between them : the anterior one occupied by the consultation-room and the laboratories ; and the other constituting the hospital and its annexes.

The anterior part, corresponding to the main façade, consists of a central part and two wings. At the centre there is a waiting-room for the public and a large consulting-room. In the left wing, communicating with the consulting-room by wide passages, are installed : a silent room, for the examination of sick patients, with walls of agglomerated cork, and double doors and windows, to assure the indispensable quietude for percussion and auscultation ; a laboratory where the students are instructed in the practice of the elementary researches necessary for the establishment of certain diagnoses, and where they have the opportunity of pursuing the work necessary for the construction of their theses ; a dark-room equipped for the examination of eyes ; a pharmacy ; a room for pathological specimens ; finally, an amphitheatre to take an audience of 150, and arrangements to allow of lantern and cinematograph demonstrations.

In the right wing is a room to apply dressings ; a radiology room—the installation of this latter comprises a generator with revolving contact, of a strength of 100 milliamperes under a charge of 110 kilowatts ; an adjustable combiner with rheostat and autotransformer regulating double fuel and penetration ; delay synchronometer, allowing of all the operations of radioscopy and radiography ; finally, a special table, constructed according to our instructions, for the needs of the veterinary clinic, and first demonstrated at the Congress of Surgery of 1929. This table, furnished with a Coolidge lamp, allows of putting the animal in all positions and examining the organs under different incidences, A complementary installation for the application of radiotherapy is in course of erection. A small near-by room is fitted up as a photographic studio. The manipulation of the apparatuses is left to the students, who soon acquire a remarkable deftness in their use. (We would mention here, in order to show the importance of this service, that 80 examinations of ailing subjects have been carried out during the month of May, 1931 ; that two theses on radiology have been presented to the faculty, and that three others are in course of preparation.)

Finally, in the same right wing, the offices of the acting professor and of the chief assistant open into the main laboratory destined for instruction in research and for the assistants.

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Behind this building is the hospital into which owners have access by lateral doors. It is divided into two blocks—the one reserved for contagious diseases comprises two lots of kennels, one for animals affected with distemper, the other for skin diseases (Professor Henry). The block destined for non-contagious maladies also comprises two lots of kennels—one for medical and one for

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surgical cases (Professor Coquot). Also, a separate room is arranged for the cat kennels.

These two blocks, which have no communication between them, are separated by different service premises (kitchen with sink, dressing place for each kennel, deposit of materials, etc.). A special mention ought to be made of an apartment equipped as a photographic studio with two ranges of mercury vapour lamps for the taking of fixed and moving views, and a hydrotherapy room fitted up for douches, baths, and drying.

The hospital comprises a total of 80 cages of different dimensions for animals of all sizes. Constructed of cement, with a glazed washable surface, they are provided with a special system of drainage, which assures the flow of urine directly into the drain without approaching the open air.

Some cages have been furnished with radiators, placed immediately under the floor, for animals that must be kept warm. In each compartment there is a movable floor with a wooden opening, occupying about half the surface of the ground, and covered with a light layer of straw—at least during the cold months. Each kennel, well ventilated and lighted, opens on to a large cemented court planted with trees, for exercising sick subjects. One or two have little separate courts communicating with each cage. A feeding passage allows of rapid distribution of food to the individual dog, made applicable by an ingenious arrangement of revolving doors communicating between the cages and the passage in question. In all the locales the floor is paved with setts that can be swilled down. The walls up to two metres high are made of white faced brick. All the angles are rounded to allow of easy disinfection. Finally, there is the arrangement of the central heating, the distribution of water and gas, and a lavatory, etc.

This service has now been in use, as previously mentioned, for two years. The following are the statistics of the different clinics during the scholastic year 1929–1930, and give an indication of the work done.

I.—Animals Hospitaled.

	Medical.	Surgical.	Const. Disease.	Parasit. Dis.	Total.
Dogs	447	313	18	16	794
Cats	63	70	5	1	139

II.—Animals Brought for Advice.

Dogs	5,095	4,088	138	891	10,212
Cats	889	1,421	4	196	2,510

In spite of the amount already agreed to by the Administration of Veterinary Services, the equipment is not nearly complete. We wish for authority to rearrange the pathological specimen room: this will, of course, take time, as we depend largely on specimens from practitioners. Perhaps some Mæcenas will have the happy thought to offer us projection apparatuses for our amphitheatre. Perhaps also we shall some day obtain the means to buy electro-

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diagnostic and electrotherapy equipment and the fittings for an inhalation room. Funds for a library are wanting, and for many other things. But what work is ever finished? We think, however, that in its actual state our service represents the most complete and modern installation of its kind. Without useless luxury, it is most rationally adapted to instruction and research concerning the pathology of the smaller animals.

The accommodation includes:

Waiting room.
Consultation room.
Dressing room.
Surgery.
Radiology.
Professor's Office.
Small Laboratory.
Dark room.
Assistants' Office.
Assistants' Laboratory.
Pupils' Laboratory.
Auscultation room.
Pharmacy.
Amphitheatre.
Ophthalmology.
Pathological Collections.
Dressings room.
Inhalations.
Material room.
Kitchen.
Straw Store.
Disinfection room.
Hydrotherapy.
Kennels (Contagious).
Kennels (Non-Contagious).
Cattery.
Kennels (animals under observation).
Individual small courts.

SLAUGHTERING BY JEWISH AND NON-JEWISH METHODS.*

By Prof. Dr. MAX MÜLLER.

Chief Veterinary Inspector of the Abattoir, Munich.

THE perfection of the technique of slaughtering has given rise to violent controversy on the manner in which animals should be put to death. It is not my intention to enter into this argument. The attitude adopted by the individual on this question will vary in accordance with the point of view which predominates.

Veterinary surgeons and butchers insist on, and aim at, the slaughtering of beasts by rapid and painless methods. Societies for the protection of animals do their utmost to prevent any treatment of the beasts about to be slaughtered which may be regarded as cruelty. Hence their antagonistic attitude towards the slaughtering of animals without stunning, as is the case in the Jewish slaughter-houses to-day. In itself, the killing of animals contradicts the fundamental principle of the protection of animals, for by slaughtering, a man annihilates them instead of protecting them. Man, as a meat-eater, kills animals for his nourishment by way of division of labour, and by slaughtering, man opposes the creative power of nature, or that higher being known as God. To the assertion

* Reprint from Deutsche *Schlachthof-Zeitung*, 26th year, 21st issue.

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that man requires the flesh of animals for the nourishment of his body, is opposed the vegetarian assertion that man is by nature adapted to a plant-diet. The Pythagoreans of old refused to eat meat, and also the Buddhist of to-day renounces the taking of meat more and more as he believes himself to be approaching Nirvana. By the killing of an animal the Buddhist becomes stained by blood-guilt, and because of this blood-guilt, the butcher is believed to have fallen amongst evil spirits.

The fifth commandment reads: "Thou shalt not kill,"—it does not read "thou shalt not kill any man." According to the Biblical story of creation, God created with man the fruits of the earth for his enjoyment; between man and beast there reigned peace and friendship. Only after the flood did Noah and his followers take to the eating of animal flesh, and the killing of animals was allowed. But a further ban went forth immediately limiting this new right: "Thou shalt not eat living flesh!" The flesh allowed for eating must be of slaughtered animals which had bled to death. Blood, as the supposed seat of life and of the soul, according to the Old Testament conception, belongs to the Creator and Giver of Life. The blood of animals destined for consumption may only be shed on condition that it is offered as a sacrifice to God for the expiation of sinful man. Such conceptions are to be found in the other old religions; and slaughtering was always originally a religious act, as it still is to-day to a certain extent. Amongst the old inhabitants of India, the Egyptians, the Bactrians, the Medes, the Persians, and in Homeric days, slaughter originally formed part of the cult. It was, indeed, believed that the flesh of animals, without rousing the wrath of God or the gods, sufficed to ward off the influence of evil spirits if the sacrifice was consecrated to a deity. This was attributed to the fact that to a certain extent God, or the gods, participated in the smoke of the sacrifice. Concealed in the sacrificial smoke, through sweet-smelling woods in the form of incense, Jehovah, like Zeus and the other gods, made known their agreement with the killing of the animals and their participation in the enjoyment of the sacrifice. The festal slaughtering and the banquet were, indeed, the outstanding events of these feats. Our modern feast days also date from the old sacrificial feasts. The festal roast, the Easter lamb, and the Christmas goose, all remind us of these. The domestic animals kept for slaughter are, indeed, none other than the old sacrificial beasts. The German word "Ungeziefer" (vermin) originally signified those animals which cannot be slaughtered, sacrificed, and enjoyed. The word "slaughter," and the word "sacrifice," had at one time often the same meaning. Through slaughter and sacrifice men established communication with the higher beings, to the friendship and favour of whom they aspired.

In the first book of the Illiad we read: "Thus spoke Chryses praying and him Phœbus Apollo heard. But after they had prayed and sprinkled the pounded barley, they first bent back the neck of the victims, killed them, and flayed and cut out the thighs and wrapped them round with the fat, having arranged it in

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double folds; then laid the raw flesh upon them. Then the old man burned them on billets and poured sparkling wine upon them; and near him the youths held five-pronged spits in their hands. But after the thighs were roasted and they had tasted the entrails, they then cut the rest of them into small pieces and fixed them on spits, and roasted them skilfully, and drew all the viands off the spits. But when they had ceased from their labour, and had prepared the banquet, they feasted; nor did their soul in any wise lack a due allowance of the feast."

Originally the priests took upon themselves the slaughter, and the Godhead was honoured with a bloody sacrifice. Only with the higher development of the sacrificial cult connected with the slaughter did subordinate persons undertake the slaughter and dissection of the animals, whilst the priest completed the ritual. He undertook the inspection, which exists still to-day in connection with meat, and if no objection could be raised and the portion offered to the deity had been placed in the sacrificial fire, the priest made the significant declaration: "It is clean."

It is well known that this close connection between slaughter and religion still exists among the Jews. The Jewish butcher as the representative of a cult, at the calling of God proceeds with the bleeding of the animal, and after the dissection, declares it to be "koscher," meaning "clean," or "trepha," meaning "unclean," or, more exactly, mutilated. According to the Jewish religion mutilated animals may not be eaten. Deliberate enjoyment of meat which has been declared "trepha" is regarded as a sin against religious law.

According to Jewish rites, slaughter means the complete slaughter or bleeding to death of animals. The German word "schaechten" is formed from the Hebrew word "schachat," which means "drawing," and refers to the drawing of the knife through the skin, gullet, wind-pipe, neck muscles and large arteries and veins of the neck, in order that the animal may bleed to death through the blood vessels. The flesh of animals which are bled to death remains firm longer than does the flesh of animals which are suffocated. The longer the flesh retains the blood the quicker it is spoilt by the setting-in of putrefaction. Now decayed or decaying meat is unclean; its use is not good for the health of human beings, and it may even injure or definitely undermine their health.

The laws of the Old Testament forbid, therefore, not only the eating of the flesh of unclean animals, to which class, as is well known, the pig belongs, but also the eating of mutilated animals: animals which have been bitten to death by wild animals, and animals which have been suffocated, *i.e.*, all beasts which have not been bled to death. Bleeding cattle, as carried out in the Jewish slaughter-houses, was doubtless, in the old days, the best method of slaughter, and it was practised by all the peoples of some civilisation, and also by nomads. It remained for the lust of decadent Rome at the time of the emperors to cultivate a covetous and perverse desire for unsual tit-bits, such as the udders of sucking pigs made richer by drawing, pressing and roasting on hot spits. Anyone who

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ate either raw, or in its own blood, the flesh of animals which had been caught, trapped or baited, was regarded as a barbarian. Only cooking and roasting, *i.e.*, the preparing of the raw meat, made this a dish for the civilised races of yore. The Huns were regarded as the most frightful of the barbarians, and of them it was said that they made their meat tender under their saddles. The Tartar beef-steak still bears the name of the Tartars, who were regarded as barbarians.

The Christian Church did away with the sacred aspect of slaughtering. According to the Church the sacrifice of Christ's death took the place of the old idea of a blood sacrifice to God. It was symbolised in the celebration of the Mass, and thereby all association between the slaughtering of animals and the Christian cult was at an end. The Apostles only retained three of the Old Testament commands: (1) The drinking of blood was forbidden; (2) the eating of the flesh of animals which had not been slaughtered was forbidden; (3) sacrificial meat was not to be eaten.

Everywhere where the heathen peoples were converted to Christianity, obedience to or neglect of these laws was regarded as the test of the completeness of the conversion. The slaughter of animals and the sacrificial feasts stood, indeed, everywhere in the closest relationship to the heathen religions. Yet many heathen customs could not be abandoned at once, and they had to be adapted to Christianity. Even slaughtering near the churches and banquets in honour of the All-Highest were at first tolerated. Only the flesh of horses, the favourite Germanic animal slaughtered for the eating of the sacrificial meat, was opposed by the converted Christians, the Pope having declared its flesh unclean and abhorrent. Accordingly, the slaughtering and killing of horses for purposes considered infamous and dishonourable by the church, as opposed to the killing of the animals which the church regarded as suitable for slaughter, created the task for the now honourable butcher. From this era the enjoyment of horse flesh was considered a heathen custom—a thing "not done—" whilst even now a certain odium is associated with the eating of horse flesh. On the other hand, contrary to Old Testament laws, the eating of the flesh of the pig was allowed. This was due, in the first place, to existing circumstances: the Romans were extremely partial to the flesh of pigs, a fact which might have placed special difficulties in the way of the spread of Christianity amongst them.

The ban on the eating of blood and the flesh of animals which had not been slaughtered (which did not include trapped animals), was never strictly adhered to by Christians, in spite of the fact that these Old Testament laws were re-enforced by the Popes and the Church councils, and have still to-day not been rescinded. The Germanic and Celtic peoples believed that blood was the source of power, and by the drinking of blood, power was to be attained. This did not apply only to the blood of animals, but also to the blood of men, and in particular to the blood of conquered foes. For this reason one of the questions in the form of confession drawn up by Boniface, read: "Hast thou drunk of the blood of an animal or of a man?" "Blot," meaning blood, was the old Nordic word for

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sacrifice. Amongst the Germanic peoples, November was called the month of blood, sacrifice, slaughter of the oxen. At Martinmas there was great slaughter and banqueting, because then the animals which could not be kept through the winter were killed. Black puddings have even to-day not disappeared from the butcher's lists, and trapped hares, deer and birds are still eaten. The shot of the modern gun has taken the place of the hunting of wild beasts and the killing with spears. Contrary to slaughtered animals, wild animals are not bled to death, therefore in the Old Testament sense they are unclean. In the case of non-ritualistic slaughtering of domestic animals, the beasts were, in accordance with more highly perfected methods of slaughtering, stunned before being allowed to bleed to death, *i.e.*, they were given a blow on the forehead which knocked them senseless, and lessened their resistance to the actual slaughter. This was a Germanic and also a Roman custom, whilst it was also sometimes practised by the Israelites; but the High Priest Jochanan forbade it lest it should injure the skin of the forehead and render the beast "trepha." The old laws of the Church regarding the inspection of meat formed the basis of lay regulations on the subject. The oldest laws relating to this matter, as laid down in German towns after the introduction of Christianity, usually reiterated that the meat must be that of clean animals which were healthy and fresh: it must not come from unclean animals: animals which had died, been suffocated, or mutilated.

As the Jewish element in the towns increased with the growth of trade, there arose a distinction between "Jewish meat" and meat which had been slaughtered, not according to ritual, but simply according to regulations. The Butchers' Guild insisted that the meat of animals killed in the Jewish slaughter-houses—that is to say, of cattle which had not been stunned—should not be sold at the same stalls as the other meat: it must be sold at the special Jewish stalls. At Church Synods and provincial councils warnings were even given of the danger which threatened Christians if they ate of the meat of animals slaughtered in the Jewish slaughter-houses. The abysmal ignorance of the nature of contagious diseases, and especially of the much-feared pest and the black death, lead to the Jews being accused of selling to the Christians poisoned meat from animals slaughtered in the Jewish slaughter-houses, and thus causing the pest. This was one of the reasons for the persecution of the Jews in the Middle Ages.

From the days when slaughtering ceased to be sacred, until quite recent times, the general public has taken no particular interest in methods of slaughtering. Only latterly have the centralisation of slaughter-houses and the control of these by veterinary surgeons attracted attention to the technique of slaughtering.

Slaughter-houses have become secular places where animals destined for human consumption may be killed, whereas the Jews originally slaughtered their animals in the fore-court of the temple, that is to say, on hallowed ground. Yet it is obviously a sign of the higher standard of modern civilisation that in these secular slaughter-houses the animals are killed in the most humane manner possible. The model slaughter-houses of Germany, with their perfected slaughter technique

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proves that she is in the first place among civilised nations in this respect, and without doubt at a less barbaric stage of development than other countries which endeavour to conceal their lack of culture by criticism of others.

In the German slaughter-houses at any rate the technique of humane slaughtering and complete bleeding of the animals was particularly well developed and put into practice. In other countries also axes, hatchets and hammers at an early date took the place of the club. These were effective in stunning, provided always that the wielder was skilful and the animal quiet. The first real improvement in the technique of slaughtering came with the introduction of the mask, with the help of which the blinded animal was stunned by a steel shaft being driven into the skull. Then followed the apparatuses for projecting shot and shafts, of which the latter is technically perfect, and has proved extremely useful. Restive animals are placed in the position which allows of the most rapid and effective stunning. In the Jewish slaughter-houses also the preparatory measures have been improved upon. The difference then to-day between Jewish and non-Jewish slaughtering methods is that, while the one is according to ritual, the other is entirely secular; the one does not permit of stunning, the other does.

Much has been written regarding the advantages and disadvantages of these two methods of slaughter. In particular it is repeatedly asserted that the Jewish process bleeds the animals more completely than the other method, and therefore the flesh of these animals is more firm. This academical argument is very easily answered in the light of everyday experience. The bleeding of the animals may be more or less successful either with or without stunning; extreme firmness of the meat depends upon quick and complete bleeding. This, again, however, is dependent upon factors, the consideration of which is outside the scope of this article.

The introduction of compulsory stunning of all beasts about to be slaughtered raises great difficulties in the case of ritualistic slaughtering in accordance with the laws of the Jewish religion, because the injury to the forehead and the skin of the forehead may render the slaughtered animal "trepha," or mutilated, when it will not be eaten by extremely orthodox Jews. Yet the injury which may be done to the forehead and the skin in stunning is far from being mutilation as this was understood originally. A more tolerant interpretation by Jewish scholars of the laws governing the ritualistic inspection of the slaughtered animals is therefore perhaps possible. The Christian Church showed itself very tolerant in the interpretation of the Old Testament laws regarding food which it adopted, and it renounced a further execution of these laws as soon as the spirit of heathendom began to disappear. It is obvious, and therefore a justifiable demand, that the progress made in non-Jewish slaughter-houses as regards the technique of slaughtering must become as widespread as possible. A regulation that all animals must be stunned before slaughter creates difficulties in so far as the Jewish slaughter-houses are concerned, because the way of stunning the animals by a blow on the forehead or using a shaft is not practicable, for in both

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these cases the forehead and the skin may be injured. But it would be possible to find a solution of the question which will be satisfactory to all parties by stunning the animals in the electrical manner.

The assertion that slaughtering as such is cruelty to animals is not changed by the sacred character of this method of slaughter. Any method of slaughter may be cruel if the animals to be killed are handled roughly or deliberately frightened. It must be admitted that the preparations for the Jewish slaughtering are cruel. The only man entitled to find every slaughtering cruel is the man who rejects the eating of meat because he believes it to be contrary to a higher law. If, however, the sympathy of man voices an opinion on the manner of slaughtering, and insists upon a rapid and humane method, then doubtless slaughtering and stunning as practised to-day will be given the advantage. In reality the stunning of the animal is in accordance with the sacred rites of Jewish slaughtering. Advancing civilisation is taking a strong attitude on the subject of stunning before death, and this explains the extended interest of all classes in methods of slaughter, and in particular the anxiety of meat eaters who, instead of supporting the protection of animals, are committed to their destruction. The essential point of slaughtering is that the animals should be gently and humanely handled. The foregoing article has been an attempt to show to what extent this matter has been influenced by religious thought, and to what extent by purely worldly motives. Fanaticism on either side has been rigorously avoided.

In the German slaughter-houses the demand for the rapid and humane slaughtering of the animals is given great consideration, if only for the sake of protecting the work of the butcher from the reproach of being a rough and blood-thirsty task. For, after all, it is the general public which desires the slaughter of the animals. For this reason we find in the slaughter-houses many exhortations for those charged with the killing of the animals, with one of which the foregoing discussion must close :

" Bloody is thine office, oh butcher, therefore practise it humanely ;
Let not the animal suffer which you destine to death.
Lead it with a gentle hand, kill it swiftly and surely,
Saying to yourself as you strike : ' May death come as gently to me.' "

ANIMAL CHARITIES : A WORD OF ADVICE TO DOG LOVERS.*

By A VETERINARY SURGEON.

How often do we find in the press and in magazines appeals from various societies to aid them in their work of relieving the suffering of all animals of those poor unfortunate owners who cannot afford to pay for the services of a

* Reprinted from *The Highroad*, the organ of the Merseyside Free Churches of Liverpool.

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qualified veterinary surgeon. Every Britisher has a deep love for animals, and when a poor dumb animal in its pain looks up to his master and appeals for help, it is the duty of his owner to give the one who is always faithful to him a square deal, and see that he gets the best skilled treatment in his hour of need, for he trusts you always. If you are conscientiously too poor to pay for skilled treatment and seek free treatment at a dispensary, first inquire, in justice to your dog, if the attendant holds any legal qualification whatsoever to treat animals.

The public should know that at the present time there are certain dispensaries whose ruling body is obviously of the opinion that the dumb animal does not require as much consideration in the matter of skilled treatment as man. One would expect that a society whose aim is essentially that of relieving suffering in animals would provide the best skilled treatment possible, and not offer "quack" treatment in return for the thousands of pounds it collects from the animal lovers of Great Britain. If you are a true animal lover you will place no reliance on the judgment of attendants of dispensaries who legally are unqualified to undertake the treatment of animals. The mere fact that an attendant wears a white coat, can put a stethoscope to his ears, and use a thermometer gives him no legal right to pose as a qualified veterinary surgeon.

At the present time there is a society which, by touching appeals, has collected thousands of pounds from the animal-loving public, and boasts of having attended to over one million animals in a year. Is there not a risk that the owners of these animals are misled into supposing that their animals have been treated by a qualified veterinary surgeon? Numerous owners of animals who can well afford to pay for treatment visit the dispensaries of this society, thinking that they are helping a worthy cause by dropping a few shillings into the collecting boxes at each visit. The fact that the names of eminent persons appear as patrons of this society strengthens the view of such people that the attendants of this society are legally fitted for the work. No doubt the majority of these patrons have unthinkingly given permission for their names to be used in connection with what appears to them to be a worthy cause.

Thousands of dogs are destroyed each year by this society on the advice of its attendants. There are times when a veterinary surgeon of long practical experience cannot decide whether a suffering animal is beyond the sphere of treatment, but these unqualified attendants have the courage to sit in judgment whether a suffering animal shall be placed in the lethal chamber or not. How many links of friendship between man and animal have been sorrowfully yet wrongfully severed by the foolish resort to the lethal chamber? The presence of such a society is obviously not only a menace to animals and man, but a menace to public health.

The Menace to Public Health.—The unqualified attendants of this society are incapable of carrying out the many scientific and microscopical tests which are necessary in the diagnosis of such fatal diseases as tuberculosis, rabies, glanders, anthrax, etc.; the result is that a mistaken diagnosis in such cases as these may

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lead to infection and death of the owner of the animal, or a serious outbreak of disease, and much financial loss to the country. It is regrettable to think that an attendant of this society should perhaps visit a tuberculous cow and treat it for several weeks, during which period many infants would be contracting a fatal disease by consuming milk from the wrongly-diagnosed tuberculous cow. Everyone realises the danger of playing with fire, but far more disastrous results can follow by playing with disease.

Injustice to Animal Owners.—At the present time many poor hawkers are often involved in motor accidents, and may visit these dispensaries with their injured animals for treatment. When the time comes for the hawker to claim just compensation, the society is powerless to help, for no insurance company or magistrate would listen to the evidence of an unqualified person. What is the result? The society has been responsible for the unfortunate owner missing the opportunity of obtaining justice.

Prosecutions for Cruelty.—Though prosecutions are often necessary to prevent cruelty to animals, this society never institutes proceedings against persons, no matter how brutal such treatment may have been. The Royal Society for the Prevention of Cruelty to Animals is known throughout the world as the pioneer in the prevention of cruelty to animals movement, and they never hesitate to prosecute in those cases where deliberate cruelty is practised. The dumb animal is their first consideration.

Injustice to Animals.—It is regrettable to think that each year hundreds of thousands of dumb animals are submitted for the diagnosis of their disease to persons unfitted to carry out such work. It is more regrettable to think that the law allows these unqualified assistants to take up a knife and attempt an operation on a dumb animal. Readers no doubt would be interested to know how these persons avoid the grossest cruelty when they are not permitted by law to be in possession of such essential scheduled drugs as morphia, opium, cocaine, etc.

Your duty, if you are in a position to pay for treatment, is to take your animal to a qualified veterinary surgeon, and should you feel disposed to help any society who professes to relieve suffering in animals of the poor, you should take care that it should go to the right source by asking the ruling body of the society the following questions: (1) Is there anybody connected with the society who holds any legal qualification to treat animals? (4) Do you treat only animals of the poor? (3) Do you permit unqualified persons to treat and operate on dogs?

Your duty, if you are not in a position to pay for treatment, is to consult the R.S.P.C.A., which only employs veterinary surgeons who act in an honorary capacity. Liverpool and district are exceptionally fortunate in that the needs of poor animal owners are amply catered for. The Liverpool Veterinary Hospital in Pembroke Gardens is an excellently-equipped hospital where operations of all kinds are carried out by a clinical staff of veterinary surgeons who give their

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services free, and any poor animal owner can receive a free admittance card from any veterinary surgeon to attend this hospital.

The R.S.P.C.A. also have dispensaries in Liverpool, at Larch Lea and Mill Road, and also in Birkenhead and Wallasey. Here also veterinary surgeons attend in an honorary capacity. The Veterinary Hospital, the R.S.P.C.A., the National Canine Defence League, and a few other societies see that the suffering animals receive the best skilled treatment, and are always grateful for any financial help. So should you feel disposed to help the worthy cause of relieving suffering in animals, let your subscription go to those who give the animal a square deal.

OTTAWA AND THE VETERINARY PROFESSION.

By LLEWELLYN E. W. BEVAN, M.R.C.V.S.

THE veterinary profession is chiefly concerned with the science and art of veterinary surgery and medicine, and in ordinary circumstances is not interested in politics; but the proceedings at Ottawa, and the decision to foster the pastoral industries of the British Empire by quotas, protective tariffs, and other means, are of particular importance to it. For if livestock from the various parts of our wide-flung Empire are to compete successfully in quality and quantity with those from other parts of the world, and if an uninterrupted supply is to be maintained, they must be protected from disease. It is only upon a foundation of good health that the pastoral industries can be successfully developed. Thus a grave responsibility devolves upon the veterinary services of the countries concerned. It will be remembered that in January, 1929, a report of a committee appointed by the Secretary of State for the Colonies, and presented by him to Parliament by command of His Majesty the King, dealt very fully with the whole question of veterinary education and research, and the Colonial veterinary services in particular. This committee was known as the "Lovat Committee," and its decisions and recommendations were generally approved by the veterinary profession. The following extracts are taken from the introduction to that report, and are as appropriate to-day as at the time they were written. It would be well if the whole report could be reproduced, but limitations of space render that impossible, and only brief portions of it can be referred to here. The preamble reads as follows: "At the outset of our report we should like to emphasise the growing importance of veterinary activities in the Colonial Empire. The successful development of public health involves problems of improved milk and meat supply. The advance of agriculture is closely associated with animal husbandry in its widest sense—the use of stock for agricultural operations, transport, manure, etc., and the growth of fodder crops. Finally, there is the economic and sociological importance of animal industries for both export production and local consumption."

"We cannot any longer limit veterinary activities to the mere treatment of specific diseases, or even to the prevention of the spread of epizootic and enzootic diseases. The increase and improvement of domestic stock of all kinds are essentially

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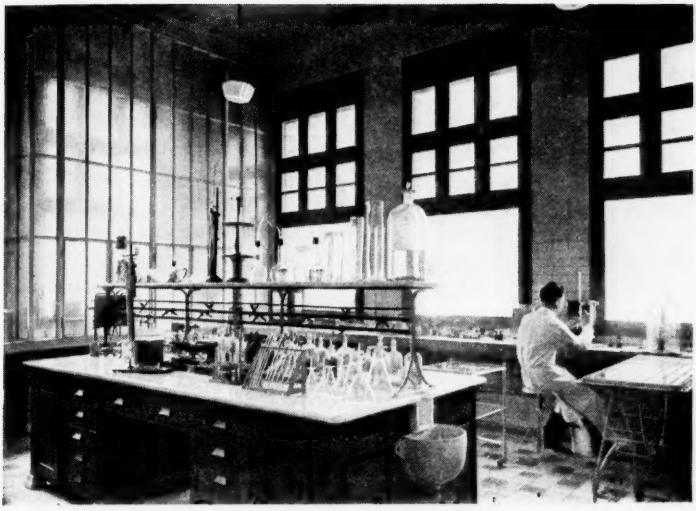

FIG. 1.—The Clinical Laboratory.
(Article by Professor V. Robin, *page* 479)

FIG. 2.—A Row of Kennels.
(Article by Professor V. Robin, *page* 479)

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part of modern veterinary science. Animal nutrition and animal genetics are now seen to be not only of the utmost economic importance, but also of immense significance in the prevention of disease. Modern developments in immunology have far-reaching applications in animal industry. Resistance to disease, either hereditary or directly conferred by the use of vaccines or sera, is a vital factor in the progress of any animal industry. Finally, there is the fact that the advance of modern medical science—so largely the result of observations on animals—requires the continuous collaboration of veterinarians in the solution of such problems as insect-borne diseases like the trypanosomiasis or the little understood category of virus diseases, the causal agents of which are beyond the reach of the microscope. All these considerations point to the desirability of a new outlook on the importance of the rôle to be filled by the veterinarian, and to the importance of attracting to the veterinary profession men of high scientific training and attainment. . . . . From the special point of view of the Colonies, it is clear that the problems of animal industry in the tropics have not yet received the same attention as they have in the temperate zones. There are vast new fields to conquer. Of recent years Britain has done much for tropical medicine, tropical agriculture and tropical forestry, but as yet but little for tropical veterinary science. It is our earnest hope that henceforward this last sphere of endeavour will receive the attention and support that its importance deserves."

The report then explains briefly the enormous areas which as colonies, protectorates and mandated territories under British administration are administered under the direction of the Secretary of State for the Colonies, and gives some idea of the vast numbers of animals involved. " Apart from horses, pigs, etc., there are in the Colonies some 18,000,000 cattle and 17,000,000 sheep." It adds : " these considerations alone would justify the provision of adequate measures for combating animal diseases and improving the health and nutrition of the flocks and herds." It gives examples of the appalling losses resulting from disease, as, for instance : " Between 1914 and 1925, the cattle population of Nigeria was reduced by as much as 25 per cent., almost entirely through rinderpest. This same disease, in two outbreaks, destroyed 5,000,000 head of cattle in South Africa south of the Zambesi, representing a loss of £20,000,000." It points out how " diseases of animals and animal-borne diseases may have a widespread and sometimes disastrous effect on the welfare of the community at large. These examples," it says, " taken at random, may serve to show how serious and far-reaching a menace is presented by the various animal diseases, and how important it is to the welfare of the Colonies that their veterinary services should be numerically adequate to their task ; staffed with a personnel of high quality ; furnished with full and up-to-date information on all matters that concern their work ; and well organised and equipped in respect of research. *We regret to have to report that this ideal is very far from being realised. On the contrary, there is evidence that this important problem has in general been seriously neglected."** The Committee was dealing with veterinary matters in as far as they affected the Colonies, but their remarks might

* The italics are ours.—EDITOR.

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be applied with equal truth to other parts of the British Empire, where, generally speaking, " the problem of animal health and nutrition has not been attacked in a sufficiently comprehensive manner, and insufficient funds have been provided." The introduction to the report concludes with the following : " We are convinced that the problem of animal health is so important that the existing conditions, both in the training institutions at home and in the veterinary departments of the Colonies, should no longer be tolerated. In both a new policy is needed, framed on bold and comprehensive lines, supported by adequate funds and carried through with energy and determination."

As the result of its inquiries, the Lovat Commission made certain recommendations, among others, that " (*a*) An adviser on animal health to the Secretary of State for the Colonies should be appointed. (*b*) A consultative committee of animal health, representing the various branches of veterinary science, should be established. (*c*) When the agriculture committee proposed by the Colonial Agricultural Service Organisation Committee is set up, a joint body representative of both agricultural and veterinary interests should be established (the Colonial Advisory Council of Agriculture and Animal Health) to ensure that questions of policy and research affecting both spheres of scientific action are properly co-ordinated."

It outlined a scheme for the organisation of veterinary research, and the establishment of a central research station, and even went so far as to indicate the personnel considered necessary for the efficient conduct of such a station, and the subjects which should receive special attention. It emphasised the need of securing close co-operation between the central research station and the veterinary departments concerned. It dealt in detail with the organisation of the Colonial services, and strongly recommended that " there should be a separate veterinary department under its own professional head in all but the very smallest Colonies." It dealt with the status, leave and facilities for study for the officers of such services. It was, indeed, a very comprehensive report, and emanated from men of the highest reputation and authority, who, realising that their recommendations required for their fulfilment veterinarians of high scientific training, outlined the methods of recruitment, training and post-graduate study considered necessary. It also suggested a scheme for the provision of scholarships to encourage the number of suitable recruits and the improvement in their training, and to stimulate men who, having already embarked on a veterinary training, show aptitude for the work, or desired to further the scientific side of their education.

We make no apology for referring at such length to the views expressed by this able committee, because there appears to be a danger that they may have been forgotten, and because we feel that in view of the responsibility imposed upon our profession by the decisions arrived at at Ottawa, there should be no further delay in bringing its recommendations into effect.

We shall no doubt be told that economy is necessary at the present time, and,

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as harassed tax-payers, we may be inclined to agree. But there is such a thing as false economy, and if the pastoral resources of the Empire are to be developed for the good of British producers and British consumers, economy in veterinary science and veterinary services belongs to that category. Just as it is futile to build a noble edifice upon a rotten foundation, so it is foolish to attempt to build up the pastoral industries of the Empire unless the diseases which deplete our flocks and herds are first understood and overcome.

The importance of veterinary science to the nation does not appear to be properly appreciated. Even since the publication of the Lovat Report, the veterinary profession of less than 3,000 members has been called upon to " raise " the enormous sum of £100,000 before the State would assist it in its efforts to replace the Royal Veterinary College, London, which was literally crumbling to the ground, in order that young citizens should receive adequate training in veterinary science—one of the essential services of the State.

Not only do animal diseases in countries overseas need to be understood and controlled, but the stock industry " at home " seriously needs veterinary attention. Tuberculosis, contagious abortion, Jöhnes Disease, and mastitis, run riot through our herds ; swine fever handicaps the pig industry ; B.W.D. and other diseases decimate our poultry ; foot-and-mouth disease interferes with inter-colonial trade ; even our own colonies refuse our stock for fear of the diseases they may bring with them.

In our opinion the Ottawa agreements only serve to emphasise the importance of veterinary science to the Empire. As we have said before, the pastoral industries can only be successfully developed on a basis of good health, and for that reason the veterinary services throughout the Empire should be strengthened and improved, and the efficiency and status of the veterinary profession should be improved in order that it may be able to perform the important duties required of it.

THE VETERINARY PROFESSION IN SOUTH AFRICA. CAPE COLONY VOLUNTEERS (1857-1913).[1]

By H. H. CURSON, F.R.C.V.S., Dr. Med. Vet.
Veterinary Research Laboratory, Onderstepoort.

Introduction.

ALTHOUGH the regular volunteer movement goes back to the days of the Crimean War (1854–1856), temporary or irregular corps, formed in times of crisis, date back much further. Theal[2] refers to the Albany Sharpshooters, Port Elizabeth Yeomanry and Beaufort Volunteers during the Sixth Kafir War (1835). The vast majority of the population, however, belonged to the Burgher force, which could be summoned when necessary ; but for several reasons, chiefly political, little use was made of this tremendous reserve after the granting of responsible government (1872).

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As a result of the Ninth Kafir War (1877–8) steps were taken to reorganise the Colonial forces, and several Acts were passed in 1878 with this object in view. At the end of 1879, the strength of these troops was as follows: C.M.R., comprising 906 men, with 537 horses (enrolled under Act 9 of 1878); C.M.Y.,[3] comprising 913 men, with 896 horses (enrolled under Act 5 of 1878); Volunteers, comprising 2,629 men, with 489 horses (enrolled under Act 10 of 1878); Burghers and native levies, comprising 112,936 men, registered under Act 7 of 1878.

The C.M.R., although constituting the permanent defence force, was also employed on police duty in the eastern districts of the Colony. The three regiments of C.M.Y.[3] were in reality volunteers, but their disbandment was brought about in 1881. The volunteers contained some excellent infantry regiments, some of which exist to-day, but of the dozen mounted corps existing in 1882 (when Act 10 of 1878 was superseded by Act 10 of 1882), none was active ten years later, when Act 32 of 1892 consolidated the several laws passed in previous years. Of the several artillery corps, only one, Prince Alfred's Own Cape Artillery,[4] is now in existence, being the First Citizen Battery of the Active Citizen Force of the Union Defence Forces. Compared with Natal, the volunteer organisation was small and handicapped by the fact that units might offer their services for certain districts, *e.g.*, the Kimberley and Bechuanaland corps, when called out on active service in October, 1899 (*Gazette*, 6/10/99), were liable for duty only in Griqualand West and Bechuanaland. The mounted corps particularly were small and scattered, their strength varying from 99 in all (of a total force of 2,285) in 1884, to 914 (of a force of 5,614) in 1907, just before the adoption of the retrenchment measures which preceded Union.

The horse allowance was £5 per annum, and the capitation grant £6 per annum, but since many volunteers did not own horses, the former amount was increased to £10 in December, 1905 (*Gazette*, 15/12/05), provided each man kept a horse which was to be passed by a board of officers (consisting of the adjutant and two regimental officers), and then registered. Ultimately, owing to financial stringency, both horse allowance and capitation grant were reduced to £5 and £4 respectively. Forming also part of the Cape Colonial Forces were the mounted Rifle Clubs, composed of men who could ride and shoot, but under little or no supervision from headquarters. Many of these bodies were called out on the outbreak of the Second Boer War. Indeed, for the purpose of the Colonial Forces Act, town guards were recognised as corps during the same struggle. The volunteers, especially in the Cape Peninsula, were frequently associated with the Imperial troops, and an excellent spirit existed between the two forces. On several occasions volunteers relieved their Imperial comrades in times of crisis, and when the call came they fought gallantly shoulder to shoulder. The volunteers were represented in every local campaign since their formation, including thus the Ninth Kafir War (1877–8), the Moirosi War (1879), Fifth Basuto War (1880–1), Bechuanaland Campaign (1884–85), Langeberg Rebellion (1897), Second Boer War (1899–1902), and even in the Natal Rebellion (1906), when detachments of

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the mounted corps were enrolled in Royston's Horse. The greatest effort, however, was in 1899–1900, when the volunteers, regular and irregular, put into the field by the Cape Colony numbered " upwards of 24,000 white men, a force considerably exceeding the total number sent by all the other colonies in the Empire, including Natal."[5]

For the greater part of its existence, the Volunteer Force was controlled by a commandant-general, who, stationed at Kingwilliamstown, was also responsible for the C.M.R. and other defence bodies, the whole organisation being known as the Cape Colonial Forces. During the period 1883–87, and from 1892 until the Second Boer War, there was no such appointment, the Volunteers being controlled by a commandant, with headquarters at Capetown, and the C.M.R. by the senior officer of the corps. The ministerial chief was the Colonial Secretary, except during 1896–97, when the Prime Minister was responsible. Delegates, for the most part chiefs of the various colonial defence forces, assembled at Durban in October, 1908, under the chairmanship of General G. G. Aston, C.B., in order " to discuss the possibility of assimilating the different forces of the various Colonies." Obviously such a scheme was premature until the four Colonies had themselves affected closer union.

Between the dates of Union (31/5/1910) and the creation of a special Union Department of Defence (1/7/12), all defence matters were dealt with by the Union Department of Interior.

Veterinary Service.

It is necessary to consider the volunteers under two heads: (*a*) Irregular Mounted Corps; and (*b*) Regular Corps. Owing to the assistance of the Imperial military authorities, a temporary corps, Frontier Light Horse, was enabled to have a veterinary officer as far back as the Ninth Kafir War, whereas the Cape defence authorities officially took no steps until after the Second Boer War (with one exception) to provide veterinary officers for some of the regular volunteer units.

(*a*) Irregular Corps.

These were formed for some particular campaign, and their existence was therefore temporary. Some performed excellent work, and it is a pity that much of their history is now forgotten.

The Frontier Light Horse,[6] raised for the Ninth Kafir War by Colonel F. Carrington, later Sir Frederick Carrington, was the first corps, permanent or volunteer, to have attached to it a regimental veterinary officer.[7] In response to a request made by the G.O.C., Lieut.-General the Hon. F. A. Thesiger, C.B., the War Officer sent two veterinary officers to the Cape during the Ninth Kafir War. These were, first, Col. V. S. F. Duck and V. S. B. L. Glover, both of the R.A.,[8] and, after their arrival in the country, Duck[9] was attached to the F.L.H., and accompanied this corps to the Transvaal in 1878 for the Second Sekukuni War (1878). Later, in 1879, the corps saw service in the Zulu War, after which it

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was disbanded. Duck's duties included also the veterinary care of all units belonging to Buller's flying column.[10] Major, later General Sir Redvers, Buller, who took command of the F.L.H. in 1878, worked hard to make the corps efficient. Streatfield[11] described him as spending many hours getting saddles to fit properly so as to avoid sore backs. Duck,[12] in an appendix to his report of the Bechuanaland Field Force, relates how, on leaving Kingwilliamstown for Sekukuniland, the F.L.H., 250 horses, covered a distance of 900 miles at an average of 22 miles per diem, arriving at their destination " in good hard condition."

Among the mounted troops employed in the Bechuanaland Campaign (1884–5) were three volunteer corps, 1st (Methuen's Horse) M.R., 2nd (Carrington's Horse) M.R., and 3rd (Gough's Horse) M.R. The 1st and 2nd M.R. were recruited in the Cape Colony, whereas the 3rd M.R. was composed chiefly of volunteers from Great Britain. The V.O. of the 3rd M.R. was A. H. Gentle. There were two other volunteer V.O's, Herbert Rangeley, who came out from England, and — Brown, but it is not known to which of the remaining two corps each was attached. Also taking part in the operations was the A.V.D., represented by local inspecting V.S. F. Duck, and Veterinary Surgeons Berne, Cox, Crawford, and Rutherford (VETERINARY JOURNAL, XX, 213). The three volunteer V.O's were attached to the A.V.D. for duty, " and rendered veterinary aid to both Government and hired animals in their vicinity " (Duck, 1888). Apart from Duck's report on the campaign, little else has been recorded. Gentle,[13] who joined as a trooper, proceeded with his regiment to Taungs from the base at Barkly West. At Taungs half the regiment remained, including Gentle, and apart from a few cases of lung-sickness among the transport oxen, the only casualties were due to galls, bruises, fractures, colic, and " colds." In both the 1st and 2nd M.R., however, cases of glanders were discovered. Rangeley came out to South Africa as a trooper, having some time previously retired from the A.V.D.,[14] and, unfortunately, beyond the surname, nothing is known of Brown.[15]

During the next campaign—Langeberg Rebellion—two V.O's were engaged, namely, G. N. Tomlinson (C.M.R.), and Robertson (D.F.H.), but neither units were irregular.

Of the Second Boer War, few of the V.O's are known. Smith, in describing, on p. 159,[16] General Elliott's operations in the Orange Free State in 1901, refers to Capt. Boase, of the " Cape Colony Forces," as being present. He was a private practitioner[17] in Capetown, and it is assumed he joined an irregular corps on the outbreak of hostilities. D. C. Campbell, of the Cape C.V.D., received special leave to join 2nd Brabant's Horse. He was on active service from 1/1/1900–31/10/1900, and no doubt took part in the siege of Wepener with his unit. J. F. Joyce, noted by Smith[18] as a C.V.S. (A.V.D.), joined Driscoll's Scouts. G. W. Lee and W. C. Lowe are stated by Smith[16] (p. 181) to have been C.V.S's, and to have held commissions as captains in Kitchener's Fighting Scouts. The latter had served in the Cape C.V.D. during 1897–8, and later joined the A.V.C. O'Donoghue, who had also been a member of the Cape C.V.D. during 1896–8, joined the South

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African L.H., as did J. Walker, who had recently left the Cape M.R. to set up a private practice in Capetown. W. Robertson, of the Cape C.V.D., was attached to the Western Province M.R., not to be confused with an Active Citizen Force unit of the same designation.

Lieut. W. D. Smith of the A.V.D. arrived from England in August, 1899, along with other officers for the Protectorate Regiment, a mounted corps of 500 men raised by Colonel Baden-Powell at Mafeking for local defence, and commanded by Colonel Hore. The attached list contains details relating to the above veterinarians:

CAPE VOLUNTEERS.

(*a*) IRREGULAR OR TEMPORARY CORPS. VETERINARIANS.

Name.	Attached to.	Born.	Qualified.	Died.
	Ninth Kafir War.			
Duck, F. (A.V.D.)	Frontier L.H.	Dec., 1845	1867, Lond.	—
	Bechuanaland Campaign.			
Brown, —	(?) M.R.	—	—	—
Gentle, A. H.	3rd (Gough's Horse) M.R.	25/4/1851	1880, Edin.	—
Rangeley, H.	(?) M.R.	—	1870, Lond.	1889
	Second Boer War.			
Boase, J. T.	(?)	—	1890, Edin.	—
Campbell, D. C.	2nd Brabant's Horse	—	1895, Edin.	Dec.27 1917
Joyce, J. F.	Driscoll's Scouts	16/5/1877	1899, Edin.	1926
Lee, G. W.	Kitchener'sFighting Scouts	25/9/1872	1893, Edin.	—
Lowe, W. C.	Do.	—	1896, Lond.	—
O'Donoghue, J.	South African L.H.	—	1888, Edin.	? 1930
Robertson, W.	Western Province M.R.	22/6/1872	1893, Lond.	1918
Smith, W. D. (A.V.D.)	Protectorate Regt.	—	1888, Glas.	—
Walker, J.[19]	South African L.H.	28/8/1868	1896, Edin.	—

On the formation of Town Guards,[20] several members of the C.V.D. joined, *e.g.*, J. A. Robinson, at Knysna; J. Spreull, at Norval's Pont and Somerset East; J. D. Borthwick, at Somerset East; and D. Hutcheon, at Maitland.

(*b*) Regular Corps.

Early in the history of the Cape Volunteers a proposal was made that a veterinary department should form part of the force. In 1878, when Colonel Jarvis succeeded Commandant Griffith as Commandant-General, he realised the need for veterinary officers, and in his report, ending March 31st, 1879, he recommended the formation of a veterinary organisation on the lines of the existing medical branch, *viz.*, a P.M.O. to have charge " of those surgeons who are from time to time engaged to serve with troops in the field, and who must be moved from place to place, and be supplied with drugs and surgical appliances according to

circumstances." In supporting his recommendation, he adds: "This country being of a nature where mounted men must always form a most important part of any field force, and the first line of colonial defence, a veterinary branch is much needed. The value of animals for this service is great, whether they are the property of the Government or of individuals. Horse sickness and accidents are of common occurrence, and the presence of a skilled veterinary surgeon with every mounted corps would prove a saving of expense, where so many losses occur through ignorance, carelessness, or, may be, wilful neglect. The purchase of horses for the Government, and the claims for compensation for losses both need the supervision and restraint of veterinary science." At the time Jarvis wrote there were apparently four qualified veterinary surgeons in the Cape Colony, *viz.*, Branford, who was Colonial V.S. to the Government; Duck and Glover of the A.V.D.; and probably Dawkins, later of the C.M.R. Since the headquarters of the Colonial Forces was at Kingwilliamstown, where also the G.O.C. Imperial Troops was located, it is possible Duck and Glover had furnished Jarvis with information indicating the importance of a veterinary department in the local forces. As an Imperial officer, however, it is more likely that the newly-arrived Commandant-General was *au fait* with the position in Great Britain, where, after generations of wasted effort, departmentalisation of the Army Veterinary Service had commenced.[21] Unfortunately, Jarvis did not remain sufficiently long in the country to carry out his scheme, and it is significant that none of his successors ever referred to the matter. Although provision was made in Appendix IV of the Rules and Regulations for Volunteers, published in 1892 and 1903 under the Colonial Forces Act, 1892, for a veterinary surgeon on the establishment of a Mounted Rifle Corps (*Gazette*, 14/10/92) or Mounted Infantry Unit[22] (*Gazette*, 11/12/03), yet very little was done.[23]

During the Langeberg Rebellion (1897), William Robertson, veterinary assistant to the Director of the Colonial Bacteriological Institute at Grahamstown, served in the Diamond Fields Horse, which was thus the first regular volunteer corps to have a veterinary officer, even though he joined apparently for the duration of the rebellion.[24] It was not until 1905, when P. X. Kearney was gazetted V.O. to the Tembuland L.H., that a regular mounted volunteer corps had its own veterinarian.

None of the regular mounted volunteer corps[25] are known to have been provided with a V.O. during the Second Boer War. The Kaffrarian Rifles,[26] a regular volunteer infantry regiment, however, was converted into mounted infantry, and from October, 1899, Lieutenant Edward Fern was V.O. He joined the unit at Queenstown, and was promoted to captain the following year. As part of the colonial division, the Kaffrarian Rifles saw much active service, being also besieged at Wepener. Fern, during the siege, had over 100 horses in the sick lines, chiefly sore backs, but under the circumstances it was impossible to protect them from snipers or from shrapnel. In 1901, he transferred to the Remount Depôt at Port Elizabeth, receiving an appointment as C.V.S. (A.V.D.).[27]

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Mention should be made at this stage of the splendid services rendered to the Imperial military authorities by Colonel V. S. Hutcheon and his assistants. Smith (1912–14) states (p. 6): "Dr. Hutcheon and his staff placed at the disposal of their military confrères the accumulated experience of many years, as without their advice and help the veterinary difficulties would have been far greater." He warned the military authorities as to the danger of using pure bile for inoculation against rinderpest, and at the beginning of the campaign suggested preventive measures for horse sickness, "the military veterinary service being only too glad to be guided by such experienced hands. If other branches had been equally willing to accept . . . local advice, there would have been fewer costly mistakes." Apart from this, members of the C.V.D. inspected remounts on their arrival at the ports, examined horses and mules prior to purchase by the Imperial authorities, took charge of remount depots, applied the mallein test, and in many ways assisted their military colleagues.

In 1903, Prince Alfred's Own C.F.A. were provided with a V.O., this being J. W. Crowhurst, who received the rank of Lieutenant.[28] The C.F.A. was formed at Capetown in 1857, in order to relieve the Imperial troops despatched to India for the Mutiny. In 1903, the corps consisted of two batteries, with an establishment of 13 officers and 202 other ranks, who were "partially paid."[29] In July, 1907, mules were used in place of horses, and for economy, coloured drivers replaced Europeans. In 1908, the second battery was disbanded, and on the establishment of the Union Defence Force in 1913, the remaining battery was embodied in the Active Citizen Force. In 1907 (*Gazette*, 11/10/07), after completion of four years commissioned service, Crowhurst was promoted Hon. Captain. When the Great War broke out he was unable to accompany the corps to German South-West Africa owing to his duties with the Imperial Military Command.

Soon after the Second Boer War, an attempt was made to raise three volunteer regiments of M.I. in the Cape Province proper, one each in the eastern, midland, and western districts. The Western L.H.[30] had a brief existence, for on account of poor support it was disbanded on 31/12/07 (*Gazette*, 10/8/09). Richard Paine of the C.V.D. acted as V.O. from 1906, his appointment, dated 13/2/06 (*Gazette*, 11/5/06), being V.O. with the honorary rank of Lieutenant. No regiment was formed in the Midlands, but from the Komgha and East London areas the Border L.H. was raised. This corps, which reached its establishment of 500, later amalgamated (1/1/1909) with Transkeian units, *viz.*, Transkei M.R. and Tembuland L.H., forming the Cape L.H.[31] The Tembuland L.H. has a special interest, for, as mentioned above, shortly after its creation (1/6/05) P. X. Kearney was appointed V.O., with honorary rank of Lieutenant. Kearney at the time was assistant veterinary surgeon C.V.D. at Umtata, and his appointment, dating from 4/7/05 (*Gazette*, 10/10/05), appears to be the first to a regular mounted volunteer corps in the Cape Colony during peace. Kearney, promoted in 1910 to honorary rank of Captain (*Gazette*, 27/5/10), retained his appointment until his resignation on 16/12/10 (*U. G. Gazette*, 14/2/11). His successor was Robert

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Percy Jones, A.V.S. at Mqanduli, whose appointment, with the honorary rank of Lieutenant, dated from 31/3/11 (*U. G. Gazette*, 25/8/11). On the establishment of the Active Citizen Force (1/7/13), the C.L.H. received the additional designation 5th M.R.,[32] and Jones continued to serve with the regiment under the new system until the creation of the S.A.V.C. in 1914. After the establishment of the A.C.F., J. A. Worsley and R. P. Jones, V.O's to the C.L.H., were given the substantive rank of Captain and Lieutenant respectively, dating as from 1/7/13 (*U. G. Gazette*, 10/10/13). As has been stated, Jones joined the C.L.H. in 1911, but the date of Worsley's original appointment as V.O. and Hon. Captain C.L.H. has not been traced.[33] The attached list gives details relating to the veterinarians mentioned above.

CAPE VOLUNTEERS.

(*b*) REGULAR CORPS. VETERINARIANS.

Name.	Corps to which first attached.	Born.	College qualified.	Died.
Robertson, W. ...	Diamond Fields Horse...	22/6/72	1893, Lond.	22/12/18
Fern, E.... ...	Kaffrarian Rifles ...	16/7/61	1891, New Edin.	—
Crowhurst, J. W.	C.F.A.	—	1887, Lond.	—
Kearney, P. J. X.	Tembuland, L. H. ...	—	1904, Dub.	—
Paine, R. ...	Western, L. H.	2/1/79	1901, Lond.	—
Jones, R. P. ...	Cape, L. H.	12/7/88	1909, L'pool	—
Worsley, J. A. ...	Do.	10/10/66	1887, Lond.	21/8/14

APPENDIX.

ADDITIONAL NOTES ON VETERINARIANS BELIEVED TO BE DEAD.

(*a*) IRREGULAR CORPS.

Boase, J. T.—

Brown, —.—Owing to the fact that Brown's initials are not known, it has not been possible to trace him, since several Browns appear in the Register of R.C.V.S. of the period.

Campbell, Duncan C.—Joined the Cape C.V.D. in 1897, and left 14/5/04. Afterwards in private practice in Manchester, where he died on 27/12/17, aged forty-three.

Joyce, J. F.—See *Journal of the South African Veterinary Medical Association*, September, 1932.

O'Donoghue, J.—On leaving South Africa, presumably soon after the Boer War, he took up medicine, graduated as M.D. Boston, and practised in Florida, U.S.A.

Rangeley, H.—

Robertson, W.—See *Journal of the South African Veterinary Medical Association*, September, 1932.

(*b*) REGULAR CORPS.

Robertson, W.—See *Journal of the South African Veterinary Medical Association*, September, 1932.

Worsley, J. A.—Ditto.

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REFERENCES.

[1] The Chief Archivist, Capetown, writes (Min. 6/2/10/8 of 23/8/29): "The regular volunteer movement may be said to date from about 1857, when the Duke of Edinburgh's Own Volunteer Rifles was formed."

[2] Theal, G. M. (1915): "History of South Africa since 1795," II, p. 101. London. Geo. Allen & Unwin.

[3] The Cape Mounted Yeomany were clothed in uniforms resembling the Lancers. All had blue tunics, but the 1st Regiment was distinguished by a white plastron, the 2nd Regiment by a red, and the 3rd Regiment by a yellow.—A Colonial Officer (1909). "Twenty-five Years' Soldiering in South Africa," p. 147. London: Andrew Melrose.

[4] In 1903 this unit was known as the Cape Field Artillery. The Original C.F.A. (1880–1884) was a permanent corps, and was later absorbed by the C.M.R.

[5] Milner, A. (1900): Speech at opening of Parliament on 20/7/1900, at Capetown. (*Gazette*, 24/7/1900).

[6] An irregular corps of the same name was created during the Second Boer War.

[7] Although the Ninth Kafir War led to the appointment of the first V.O. to a volunteer corps, yet the financial stress it caused retarded development of the civil veterinary department for some years.

[8] VETERINARY JOURNAL, VI, 430, 1878.

[9] Glover performed general duty.

[10] VETERINARY JOURNAL, IX, 439, 1879.

[11] Streatfield (1879): "Kafirland: A Ten Months' Campaign."

[12] Duck, F. (1888): Veterinary Report of the Bechuanaland Field Force, *Quarterly Journal Vet. Science in India*, VI, 355.

[13] From a private letter dated 6/12/26.

[14] From a private letter received January, 1927, from Sir Francis Duck.

[15] Serving in Methuen's Horse as troopers were J. B. A. Hare and E. W. Larnder, now A.V.D., retired.

[16] Smith, F. (1912–14): "A Veterinary History of the War in South Africa (1899–1902)," *Veterinary Record*, 1912–1914.

[17] Unfortunately little is known of the private practitioners prior to the Second Boer War.

[18] Smith, F. (1927): "A History of the R.A.V.C.," p. 260. London: Baillière, Tindall & Cox.

[19] Smith ("A Veterinary History of the War in South Africa," p. 98) refers to a Capt. Steele with the S.A.L.H., but he was unqualified.

[20] Neither Town Guards nor District Mounted Troops were eligible for the King's Medal.

[21] Complete departmentalisation dated from 1/4/1880, when the regimental system was abolished, all V.O.'s being members of the A.V.D.

[22] Actually, Mounted Rifle Corps is given, although Mounted Infantry is meant.

[23] In order of precedence light horse units came before mounted rifles or mounted infantry.

[24] Thanks to information received from Dr. G. W. Robertson (his letter, 23/6/29).

[25] Vryburg M.R., Bechuanaland R., Frontier M.R., Komgha M.V., and Transkei M.R.

[26] Now the 5th Infantry, Active Citizen Force, U.D.F.

[27] From letter dated 9/10/29.

[28] Thanks are due to Major Crowhurst, V.D., for providing information regarding the Cape Field Artillery. He states (letter, 17/5/25) that he was "gazetted as Lieut. and V.O." V.O.'s were generally given honorary rank of Lieutenant.

[29] Regulation 175 of the Cape Artillery (G. 11/10/07) lays down that the appointment of V.O. "will be an honorary one. The officer will not draw pay." Later (G. 3/3/08) he was allowed to draw pay at the rate of £36 p.a.

[30] An irregular corps bearing the same name was formed during the Second Boer War.

[31] In 1909, the C.L.H. was allied to the King's Colonials Yeomanry in place of the Border L.H. (G. 29/10/09). Since then the King's Colonials has been disbanded.

[32] From 1/7/14 the Cape L.H. became 6th Mounted Rifles.

[33] Robertson served in the Langeberg and Second Boer Campaigns; Fern in the Boer War; and Jones and Worsley in the Great War, the latter dying at Prieska on active service.

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Clinical Articles

Some Notes on Grass Disease in Horses.

By T. M. INGLIS, M.R.C.V.S., J.P.
Forfar.

BEING situated in a district which has been prone to the seasonal incidence of the above-mentioned malady for many years, I have had considerable experience of its varied forms both as a practitioner and as an assistant to the research field. My experiences have led me to recognise many facts and factors relating to the onset, course and forms of the disease without producing anything really tangible concerning the causative agent or combination of agents.

Grass disease is seasonal, being most prevalent in the months of May, June and July, although cases both before and after this period are by no means uncommon. There are three recognised types, *viz.* (1) paracute; (2) acute; (3) subacute. Paracute and acute cases are always fatal. Subacute cases may recover, more especially when the first symptoms occur late in the season. The symptoms exhibited in the paracute form, which as a general rule lasts for a few hours only, are much pain, distress, tympany and marked salivation. In the acute form the case lasts for three days. The animal is uneasy, lying scraping, usually hoven, with patchy sweating over the quarters and under the tail. It does not exhibit symptoms of severe pain, but shivers almost continually, most pronounced about the elbows and stifles. Salivation is again marked, and swallowing impossible, or at best with great difficulty. In the subacute form there is a primary severe colic, passing off in a day or so. The animal appears bright, and may continue so for a week or more before further symptoms appear. Generally this phase is followed by the onset of rigors, a general uneasiness, suspension of bowel movement, marked salivation, and frequently a twitching of the scapular and gluteal muscles. Swallowing becomes more and more difficult. The animal rapidly loses condition, assuming the posture and the " bucked-up " appearance shown in the illustration. It stands almost continually always in the same place, and generally with its hind quarters resting against a wall or hayrack. Bowel movement is suspended, no matter what medicines, or quantity of medicines, have been administered. It is astonishing how long animals suffering from subacute grass disease can live without having any relief from the bowels. This bowel stasis is not invariable. On occasion there is an apparently normal passage even to the point of scouring. Wasting, however, continues, and death generally ensues, though the recoveries recorded come from this group. The nasal chambers become encrusted and blocked, due to food material finding its way down the nose when the animal makes abortive attempts to swallow. Broncho-pneumonia due to the same cause is often found. In all types the animal makes a peculiar

nasal sound, more especially if shivering be pronounced. I, and others, have attempted all lines of treatment without avail. Purges of all kinds are useless, and very large doses are tolerated without apparent disturbance. Naturally, nausea is readily produced.

Post-mortem appearances are not usually interesting unless in the acute type, where we usually find a complete impaction of the large bowel, particularly of the cæcum. The contents are in layers very firmly packed together, and resembling layers of hard felt. This impaction is so severe in the acute form as to almost preclude rectal examination. The small intestine is either empty or fluid in content ; the stomach is much distended with fluid contents ; the common lesions found are patches of subacute inflammation ; the liver changes in colour to a very light-brown. Not uncommonly there is a marked congestion around the larynx. Apart from these conditions, the post-mortem is only of interest to the research worker. The latter has demonstrated from a large number of cases that a degeneration of the vagus is at least a common if not an invariable occurrence. Research workers, particularly from Edinburgh, have from time to time put in a great deal of hard work in trying to find the cause, but I am afraid little progress has been made further than that they can, I understand, determine from a blood sample whether it is from an acute or a subacute case. Many theories have been advanced as to the causative agent, but research workers have never been able to produce the disease artificially nor prove to their own satisfaction that they have found the cause.

For years I have held the opinion that more attention should be given to the apparently innocent grasses. My experience has always been that it has to be a grass-eating animal, that is, a grazing horse. I have not had a case in a horse eating only cut grass, although I have seen it stated that other practitioners have. Nor have I had a case in a horse who has not been on a farm, or in a town animal who has not been out in a country district. It is rather peculiar that we get most of our cases during the months of May or June, when grass is actively growing. Towards the end of June, and, incidentally, towards the end of the active growing season, we expect a less acute type of case, becoming less and less so with a percentage of recoveries. During the winter months we occasionally have a case, but only on a farm where a horse, no matter what he is at, has had an opportunity of getting at growth. It is well known that during these months we sometimes have a mild week or two, with a corresponding freshness of pasture. Then a case may occur. During this temporary mildness, I have made inquiry of other practitioners in grass-disease districts, and found the same conditions existed. It is common knowledge to those experienced in the disease that climatic conditions have a great influence in controlling its incidence. We have a great many cases during a hot, dry spell, becoming less immediately on the appearance of rain, and returning with the return of the dry weather. As a rule a horse has to be grazing for two or three weeks before the disease makes itself known. This points to a cumulative agent requiring a sufficiency to make it injurious, or it might be a latent period before clinical symptoms are visible.

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From my long experience I am confident that it has to be growing grass, if it is grass that is causing the malady. Could it be that the constituents of the grass or of a particular grass are not properly balanced, and that the animal is getting too much of the one that is cumulative, with a resultant toxic reaction?

The illustrations are of cases within my own practice. Both animals suffered from the subacute form with symptoms closely similar to those described under that heading. Death occurred in about twenty-one days.

On the farm where the photographs were taken, six cases had taken place: five died and one recovered. When put to grass, all the horses were in a large pasture: two cases appeared in about three weeks and died.

The animals were removed into another small field, and while there no further cases were experienced. After a time the horses were put back to the larger field, and in a very short time other two cases of the same type made themselves known. Every time horses were put into this particular grazing this season, the disease would claim its victim, showing clearly that the causative agent may only be confined to a particular field.

Although I have a few recoveries every year I do not claim to have been successful with any particular line of treatment. Much has to be done by research workers and practitioners to find the cause of so troublesome a malady.

Intestinal Obstruction in the Horse.

By D. E. WILKINSON, M.R.C.V.S.

Chigwell.

THAT great clinician, Sir Fred Smith, frequently stressed the importance of rectal exploration in all cases of colic in the horse, and those who have acted upon his suggestions must have learned something from every case they have so examined. The following cases, selected at random, well illustrate the diagnostic value of rectal examination, without which guide the treatment, which in each case proved successful, might never have been adopted.

Late one night in the winter of 1928, I was asked by a colleague to meet him in consultation on a "colic" case. The subject, a valuable polo pony mare heavy in foal, had since the late afternoon been exhibiting abdominal pain which the usual antispasmodic treatment failed to relieve. On examination the mare was found to be very uneasy, constantly crouching, but not lying down. Peristaltic sounds were absent, and there was some tympany. The pulse was fairly good, with intermittency during spasms of pain, skin cold, with patches of cold sweat; temperature normal. A rectal exploration, which had not previously been made, revealed an acute but localised tympany of the pelvic flexure of the colon. The rectum and bladder were empty, and the rectal mucosa dry and tender. Fœtal movements could be plainly felt. In view of the mare's advanced pregnancy the issues were grave, and relief of the tympany before the onset of

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complications imperative. After some discussion, the owner and my colleague agreed to paracentesis of the distended colon through the rectal floor, as it could not be reached through the flank. The floor of the rectum was mopped with a pad of cotton-wool soaked in tincture of iodine, and a small, fine trocar thrust through it into the distended viscus and withdrawn, leaving the cannula *in situ*, and held between the thumb and finger. Relief was immediate, and a fine stream of gas could be felt rushing through the cannula against the palm of the hand. The instrument was held in position as long as possible, but in a very short time the deflated bowel receded, leaving the rectum filled with gas, which was loudly expelled on removal of the operator's arm. The arm was again inserted and the ascending colon traced along towards the left flank, and the cause of the tympany located in the shape of a solid impaction of ingesta. This mass was moved gently to and fro by the hand in the rectum, and from time to time grasped by the fingers and compressed. During this time, a period of perhaps fifteen or twenty minutes, the rectal mucous membrane became moist and active, peristalsis recommenced, and finally the mass of ingesta broke up and passed on, to the accompaniment of an audible sigh of relief from the patient. Recovery was uninterrupted, no medical treatment was adopted, and the mare delivered a good, live foal at term.

Another case arose in a young thoroughbred mare, a very greedy feeder. This animal showed constant pain when upon her feet, but when allowed to lie down turned upon her back and lay quite comfortably and free from pain in that posture. Immediately she was made to rise the pain recurred. Rectal exploration revealed no abnormal condition except that the bowels were quiescent and very full. Attention was thus diverted to the stomach, and on careful auscultation occasional bubbles of gas could be heard ascending the œsophagus. The stomach felt full on palpation behind the sternum, but as the whole alimentary tract was gorged, this did not attract much notice. On passing the stomach tube by the nasal route and withdrawing the stilette, quite a large volume of gas under high pressure escaped. This gave temporary relief, but as the pain returned in an hour it was suspected the gas had reformed, and that the pain arose from gastric tympany. Reinsertion of the stomach tube proved this; so whilst the tube was *in situ*, the draught recommended for this condition by Caulton Reeks, and consisting of ferri sulph. and strong solution of ammonia in hot water, was injected into the stomach by the stomach tube. This very quickly gave relief, and the animal required no further treatment.

At 9.30 a.m. on October 15th last, an aged cart gelding was brought into my infirmary with the history that he had not touched his morning meal. On being placed in a loose box he at once began to show abdominal pain, pawing with the fore-feet, lying down, rolling, and looking round at his flanks. The pulse was strong and full, but intermittent during pain. Slight peristaltic movements could be heard in the left flank, but were entirely absent on the right side. Rectal examination revealed impaction of the colon. A full dose of arecoline hydrobromide

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was given hypodermically, and massage applied to the abdomen. Profuse salivation, an increased peristalsis, and a corresponding increase of pain, with the passage of small amounts of flatus and some whole oats, occurred during the hour following the injection. As the pain continued, three gallons of warm water in which an ounce of dimol was dissolved, were pumped through the stomach tube by the nasal route. The arm was inserted into the rectum, and the impacted colon gently, but very thoroughly, massaged, rubbed, and rolled about until peristaltic movements and the passage of gas could be plainly felt within its lumen. This treatment was continued at intervals during the day, and two doses of ol. tereb. in linseed oil administered, as dry undigested whole oats continued to pass into the rectum, but complete relief from pain was not obtained until twelve hours from the onset. Probably the cause of this attack was the rapid bolting of unmasticated whole oats setting up a dry impaction. On inquiry as to the dietary, it was found that no chaff had been given for the past week, as the chaff-cutting machinery had broken down. In order to ensure complete mastication and free salivation the horse was fed for two days after his recovery on dry long hay only.

On October 17th, I was called into a heavyweight hunter with similar trouble. In this instance pain was very severe and caused a peculiar nervous reflex, the animal going intensely lame upon alternate forelegs, with the elbow " dropped " in the characteristic attitude of radial paralysis. At first sight this gave the impression the horse had injured himself during a paroxysm of pain, but later it was seen that the lameness shown on the near foreleg had passed to the off-foie. Rectal exploration revealed the bladder filled to its utmost capacity, so that nothing else was palpable until this had been relieved by catheterisation. The pelvic flexure of the colon was then sought for and found, heavily impacted, *lying on the floor of the abdomen*, instead of floating. Running up to the abdominal roof, on the right side, a taut cord-like structure could be felt. Pressure with the finger upon this increased the abdominal pain. As no peristaltic movements could be felt, a hypodermic injection of arecolin was administered, and massage of the impacted colon kept up, the viscus being elevated from the floor of the abdomen by pushing the clenched first under it, then the forearm was moved to and fro beneath it. This had the effect of setting up an active peristalsis, followed by the passage of large amounts of flatus, and in two hours recovery was complete.

Three-Day Sickness.

By MAJOR R. F. STIRLING and MR. P. S. NAIR.
Central Provinces, India.

THIS short note is mainly concerned with the medicinal treatment of " tiwa," as this disease is called in this part of India. Before dealing with this aspect of the disease, a few remarks on our experience in the Central Provinces may be of interest. The disease is met in all parts of the Province, and more especially in the months of July, August and September, that is to say, during the rains.

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FIG. 1.—Clydesdale Gelding suffering from Grass Disease.
(Article by T. M. Inglis, *page* 504)

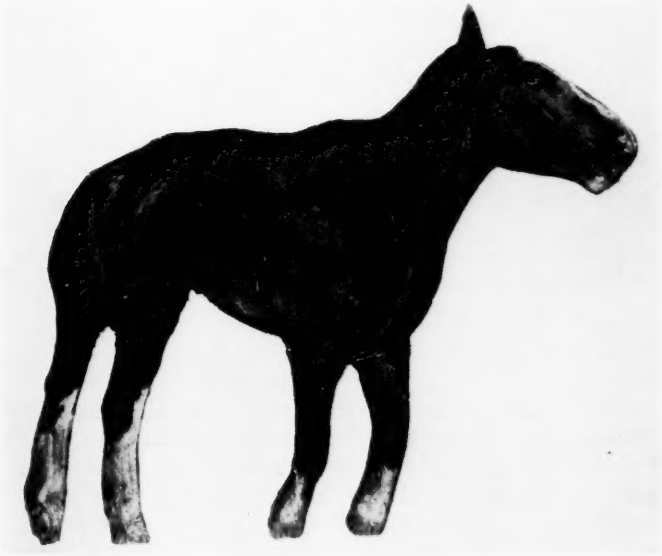

FIG. 2.—Carcase of Clydesdale Gelding. Died from Grass Disease.
(Article by T. M. Inglis, *page* 504)

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It more commonly affects cattle in the low-lying and more or less swampy rice-growing tracts. The cultivator dreads the disease, not on account of the mortality, which rarely reaches 3 per cent. of the affected cattle, but because it occurs at a time when all available animals are required for farm work. The plight of the small holders, as are most of the farmers in the rice tract, with, say, four animals, one after another of whom is useless for upwards of a week, can easily be imagined. Our experience as to the causal agent coincides with that of others in India and Africa. As to the means by which it is conveyed from animal to animal, we have nothing to contribute except to mention that the areas of selection by the disease are those in which biting flies are met in abundance.

In some field experiments, done under unsatisfactory conditions, we were able to reproduce the disease on the fourth day by the inoculation intravenously of citrated blood from affected into healthy animals. In some instances saliva from affected animals, when rubbed over the tongue and muzzle of healthy animals, produced typical symptoms on the fifth day. The same thing applied to nasal discharge. Inoculation of either saliva or nasal discharge produced no lesions. Citrated blood retained its virulence in a shade temperature of 106° F. for six hours.

Melanidi and Stylianopoulo, as quoted by Daubney and Hudson (*Journal of Pathology and Bacteriology*, Vol. XXXIV, 1931), state that true dengue of man is not transmissible by inoculation to cattle. Be that as it may, it is nevertheless of interest that one of us (P.S.N.) found that in one village "influenza" was affecting the whole village population, coincident with the existence of a severe outbreak of tiwa amongst the cattle. The villagers stated that the two diseases nearly always came together. In at least three other places one of us (R.F.S.) compared notes with the local medical officer, and found that severe outbreaks of dengue and tiwa had occurred at the same time, and had disappeared almost on the same day.

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In regard to the severity of the disease in the predilection areas in this province, we find that as many as 75 per cent. of the animals in a village are frequently affected. We have recognised three more or less constant stages of the disease: the acute stage of pyrexia and inability to move lasting three days; the second stage of gradual subsidence of symptoms lasting from two to four days; the third stage of convalescence, which varies from five to ten days.

Treatment.—It was necessary for this department to try to shorten the course of a disease which, although not commonly fatal, brought about such economic loss, by interference with the cultivators' activities, as to be as equally serious to him for the time being as an outbreak of rinderpest or hæmorrhagic septicæmia. We tried, in the field, many drugs, and it would be waste of our readers' time to relate experiences of one disappointment after another. Our best results were obtained from sodium salicylate by the mouth, but this treatment meant continuous medication for three or four days. Apart from the cost, always a matter for serious consideration in India, this method was also impracticable, as will be

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readily understood when it is stated that each of the veterinary assistant surgeons has an area of ten to twenty square miles to cover, and has under his veterinary charge anything up to 100,000 cattle.

One of us (P.S.N.) then suggested the trial of salicylate of soda intravenously. A typical case of the disease was awaited. After some time a bull was found with a temperature of 106° F., and so stiff in all four legs that movement was almost impossible. At about 8 a.m., 60 c.c. of a 3 per cent. solution of sodium salicylate was injected intravenously. By noon the temperature had fallen to 102.2° F., and the animal could move from side to side in the stall. A second injection of 40 c.c. of the same solution was given at 6 p.m. On the following morning the bull was found to all appearances normal. There was no recurrence of any of the symptoms, and on the third day he was discharged as fit for work. The owner of the bull had an unfortunate season that year, and, in all, twenty of his animals were acutely affected, and all were treated in a similar manner, and with almost similar results. We then prepared a sterile solution of the drug, and issued it in 40 c.c. sterile containers to various parts of the province. The directions were to administer one dose, and repeat in twelve hours if necessary.

We asked for reports from various centres, and from these the following may be quoted: (1) " Before the introduction of this method animals showed hyperpyrexia for three days at least. Usually the temperature ran: first day, 106–107° F.; second day, 105° F.; and third day, 103° F. In the cases I have treated by the new drug, the temperature came down to normal eight hours after injection. All animals can be discharged on the third day, and some on the second."

(2) " After the introduction of the intravenous method the temperature drops in about six hours, and the symptoms disappear within twenty-four hours."

(3) From a man who prepared the solution in the hospital in his charge: " Usually one injection of two drachms of sodium salicylate dissolved in 20 c.c. of distilled water is sufficient for animals of 600 lb. bodyweight. A second injection is rarely necessary. Lameness disappears in about twelve hours. The duration of the disease is curtailed by many days."

(4) " Twenty-two cases have been treated, and all recovered in twenty-four hours, if the injection was given at the commencement of the disease."

(5) A last extract from a laconic if not scientifically-minded assistant: " The results are miraculous."

In the Central Provinces this treatment is now ordered as a routine one, stress being laid on the necessity of administering the first dose so soon as the first symptoms appear.

We thank all the members of the field staff of the department for their whole-hearted assistance in the work we have undertaken in connection with this disease.

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A Note on the Treatment of Inversion of the Uterus in the Cow.

By H. B. COLLET, B.V.Sc., M.R.C.V.S.
Aylesbury.

THIS note more particularly applies to the treatment of the uterus after reposition has been effected. Reposition is effected according to the circumstances of the case: (1) While in the standing position; (2) recumbent, as when milk fever is an accompanying condition; (3) recumbent, under chloroform anæsthesia; (4) by means of pulleys: the hind quarters are raised, and sacks stuffed with straw, hay or chaff packed under the loins. After reposition has been effected, the patient, if able, is made to rise; otherwise treatment is carried out in the recumbent position. The owner has been previously instructed to have available a good supply of hot water. A large four- or five-gallon milking pail is filled with hot water (two or three pailsful will be used in all); the temperature is not measured, but is gauged by the hand and arm. One ought to be just able to retain the hand and arm in the water.

Using the stomach pump and tube, the tube is carried into the uterus to the full extent of the arm. A quantity of water sufficient to weigh down the uterus and smooth out any folds is pumped in, and this is gently swirled round with the hand. The stomach tube is removed from the pump, and the water allowed to syphon out. The end of the tube has the fingers held a little in front, as it will be found that the cotyledons, or the wall of the uterus, will be sucked against the end and the outflow blocked. This pumping in and syphoning out of water is repeated until the water returns practically clear. It will be found by this time that the uterus is contracting steadily, and the cotyledons are diminishing in size. So much does the uterus contract that it will clasp the arm tightly, and it will be necessary to inject a little more water to allow the arm to be withdrawn freely. When this stage has been reached the arm and tube are withdrawn.

The advantages of this form of treatment are: (1) The smoothing out of the folds of the uterus by the weight of the water; (2) the cleansing effect on the uterus that the pumping in and syphoning out of the water has; (3) the marked contraction of the uterus that is produced by the injection of hot water; (4) the entire absence of straining afterwards. Clamps or trusses are quite unnecessary. No after-treatment is given.

During the past eight years all cases of this kind have been treated in this manner. No record has been kept of the actual number of cases that have occurred, though they include two ewes which made uneventful recoveries. Where cases have resulted fatally, and they have formed a very small percentage of the whole, death occurred, with one exception, during reposition, or following amputation. The exception was a cow with milk fever, which died some days after. In every other case in which reposition has been effected recovery has been uneventful.

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Since the foregoing was written another case has occurred. The cow had calved during the night out in a field, and was found lying on her side with milk fever, in the middle of a cattle track leading to a brook, and surrounded by mud and puddles of water. The owner had at first nearly sent for the knacker. Considering that it was raining at the time, and the general mess all round, temptation was strong to advise sending for the knacker instead of carrying out treatment. A large churn full of hot water, trusses of straw and a number of sacks were brought out in a cart. Reposition was effected, and the usual treatment carried out, followed by inflation of the udder. The cow was hauled out of the mud on to drier ground, packed around with straw, propped up and covered with sacks. The owner was instructed, if and when the cow was capable of swallowing, to give a large dose of whisky as a diffusible stimulant. Towards evening the cow got up and was walked to a shed. She was seen the following day, and the uterus douched with hot water. No further attention has been given, and now, ten days after, the owner reports that the cow is doing well, and increasing in her milk yield.

So-called Rickets of Lambs in the Dandarragan District of Western Australia.*

By H. A. VERNON.

In the Dandarragan district a peculiar condition affecting lambs has been known for a number of years. The condition only affects the lambs from ewes that have been kept in the district for twelve months or more. The lambs from ewes in their first year in the district, though very much smaller boned than lambs produced on unaffected country, do not develop the condition, but remain apparently healthy. However, if the ewes are kept in the district the second year and mated, 50 per cent. or more of their lambs develop the condition, and if the ewes are retained over the third year and again mated, 100 per cent. of their lambs become affected. If, however, the ewes are moved on to unaffected country for three or four months after the first lambing, and again brought on to the affected country and mated, the lambs remain as normal as the lambs produced during the first year.

Sheep-owners have been overcoming the difficulty by either moving their ewes away on to healthy country each year for a few months, or by selling the ewes every year after weaning, and purchasing a fresh lot of ewes from outside the affected area. This obviously has not been an economical proposition, and has added considerably to the cost of production. The owners of one highly improved property in the affected area have for some years adopted the practice of moving their ewes to another property, fifty-six miles distant, and leaving them there for several months. This has meant a trip of 112 miles a year for the ewes,

* Reprinted from *The Pastoral Review*, January 16th, 1932.

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entailing a considerable amount of loss of time, and necessitating the manœuvring of stock on both properties.

The condition affects lambs when they are a few weeks old, the symptoms being very similar to those of cattle suffering from the condition caused by eating zamia palm. The affected lamb loses control of the hindquarters, the forequarters being unaffected. If an affected lamb is approached it becomes agitated and nervous. The more it attempts to escape, the more pronounced becomes the loss of control of the hindquarters, the legs swinging in all directions, and finally the lamb falls over. It immediately rises, runs a few yards, the front legs functioning normally, the hindquarters swinging and skidding like a motor car on a greasy track. Eventually the lamb again falls to the ground.

Upon manipulation of the limbs, the bones, though small, appear to be normal in shape, being quite straight, not curved or enlarged at the joints as in the case in true rickets.

Various theories as to the cause of the condition are held by local stock-owners, some being of the opinion that the condition is due to poison plants, others that it is a bacterial infection, and others, again, that the water contains some mineral element that induces the condition. The writer took up the problem on behalf of the owners of the property above referred to with a view to determining if it were not possible to overcome the difficulty without moving the ewes from the affected area. As he was not able at the time to visit the property, all available data in regard to the condition was collected, and by process of elimination the theory of mineral deficiency was developed. The possibility of poison plants, bacterial infection, or the water being causative factors, was carefully studied, but no evidence in support of these theories could be elicited, in fact the evidence was strongly against such theories, and rather pointed to a mineral deficiency of the pastures being the causative factor. The bones of an affected lamb were forwarded to the writer, and the analysis of these bones further strengthened the theory of a mineral deficiency. To obtain further data, a test was carried out with 1,200 ewes that had been on the property for two years. They were given a proprietary mineral supplement from the time the rams were joined in January, 1930, during the whole of the gestation period, and until the lambs were three months old. The supplement was placed in covered troughs of such a design that the ewes and lambs could take the mineral mixture whenever they so desired. The ewes commenced to lamb in May, 70 per cent. of lambs being marked. None of the lambs developed the condition, all remaining quite healthy. The lambs commenced to take the supplementary mineral mixture at about a week old.

In July the dry ewes were drafted off (some 300 in all), and the rams were joined with them. These ewes were not given a mineral supplement. They commenced to lamb in November, there being quite a good drop. However, when the first lambs were a few weeks old the so-called " rickety " condition began to develop, and eventually more than half of the lambs either died or had to be destroyed. All of the ewes were again given the mineral supplement.

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Rams were joined in January, 1931, the ewes commenced to lamb in May, 67 per cent. of lambs being marked, and when the writer examined the flock in September, every lamb was quite healthy and well-grown, not one lamb having shown the slightest sign of the condition from the commencement of lambing. An average lamb, four months old, from the ewes on the mineral supplement was killed, and its bones obtained for further examination. This lamb weighed 38 lbs. dressed weight.

COMPARISON OF BONES OF AFFECTED AND HEALTHY LAMBS.

Lamb.	Age.	Weight in Grains. Femur (Upper Thigh Bone).	Tibia (Lower Thigh Bone).	Breaking Strength of Femur in lbs.
Rickety	8 months	891	844	108
Healthy	4 months	1330	1119	294

Samples of pasture were collected from seven different positions on the affected property, some being from limestone ridges, ironstone ridges, sides of these ridges, flats with a clay sub-soil, and depressions between ridges. The analyses revealed a decided mineral deficiency of the pasture.

Conclusions.

The condition is not a true rickets. It appears to be an affection of the motor or vaso-motor nerves of the hindquarters. The writer is of the opinion that the condition is one of nutritional origin, the primary cause being mineral deficiency of the pastures. Just how such deficiency operates has not yet been determined. In arriving at this conclusion other possible factors have been carefully considered, as follows:

Poison Plants.—The theory that the condition is due to the ingestion of poisonous plants is not supported by the available evidence. (1) Ewes in the first year they are on the property produce lambs that remain healthy. If the ewes are kept on the property till the following year and again mated, a large percentage of the lambs become affected, but if the ewes are moved on to unaffected country for a few months after the first lambing, the lambs of the second year are not affected. (2) Lambs become affected before they arrive at an age when pasture constitutes an appreciable part of their diet. (3) A careful survey of affected areas did not reveal any suspicious plants. (4) That the condition is not due to an accumulated poison through the ingestion of toxic plants is supported by the fact that ewes in their second and third year on the affected area produced healthy lambs when supplied with a mineral supplement.

Bacteria.—The clinical details are not in accord with what one would expect to find if the condition was due to bacterial infection.

Water.—There is nothing to indicate that the water on the affected areas is other than perfectly good drinking water, all the water on the affected property being good, fresh, spring water.

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Nutritional.—Working on the hypothesis that the condition is of nutritional origin, and reviewing the data collected from the area, the evidence strongly postulates a mineral deficiency for the following reasons:

(1) The pasture consists of various species of edible plants, and there is an abundance of feed during the period of the year when the condition occurs. It is, therefore, not likely that a deficiency of organic nutrients would be in any way responsible, as such pastures would provide an ample organic ration, but not necessarily a sufficiency of mineral elements.

(2) *Mineral Content of Pastures.*—Analyses of the pastures disclosed a low calcium, phosphoric and iron content. The potash content is also considerably lower than that of average Australian natural pastures. (3) Comparison of the bones of an affected lamb with those of an unaffected lamb further supports the theory of a mineral deficiency. (4) Ewes that were given a mineral supplement for two seasons produced lambs during each season, none of which developed the condition, while the lambs from ewes that did not receive a mineral supplement developed the condition.

Remarks.—The result of supplying a supplementary mineral mixture incorporating certain mineral elements appears to have a definite bearing upon the prevention of the condition, and certainly has a marked effect in increasing the development and growth of bone.

The results so far obtained are very encouraging, but it is necessary that the ewes be submitted to further tests before a definite decision in regard to the value of a mineral supplement as a preventive can be arrived at. It has therefore been decided that the test flock of ewes be carried over another year, and that they be supplied with a mineral supplement; and should the lambs from these ewes next season not develop the condition, it will be reasonable to assume that the mineral deficiency of the pastures is the causative factor, and that such deficiency may be efficiently corrected, and the disease prevented, by making available a mineral supplement throughout the year.

Duodenal Ulcer in the Dog.

By W. R. McKINNA, M.R.C.V.S., D.V.S.M.
Huddersfield.

THIS condition is of sufficiently rare occurrence to merit its report, and its mention may encourage the recording of similar cases as they are found to occur by other practitioners. This case is the only one that I have observed in practice though, of course, the condition may have occurred undiagnosed, and recovery have taken place, or have been unlooked for on post-mortem examination. Duodenal ulceration occurs quite commonly in man, and the chief predisposing condition or possible cause is a definite hyper-acid gastric secretion. Formerly surgical interference in the form of a gastro-jejunostomy was the routine method of treatment in operable subjects, but this has given way in recent years to dietetic

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and alkaline treatment over a prolonged period of time. Diagnosis in man can be arrived at with comparative accuracy, but the total lack of information that we can obtain from the dog in connection with subjective symptoms will always make the veterinary surgeon's ability to diagnose the condition very problematical. Further experience with the use of barium meals and X-rays may help, but the interpretation of X-ray pictures even in the human subject has not been free from error in the past.

The subject of these notes was an Airedale dog, seven years old, which had previously had a normal healthy and active life. Prior to its last illness, an acute attack of distemper at the age of about eighteen months had been its only serious deviation from normal. The history given was that the dog had been losing condition for some weeks past ; the appetite had been capricious, but the animal's spirits were not unduly upset. Later, when brought for examination, the most marked symptom was that of vomiting, occurring every few days. Then the dog would be obviously unwell, later recovering his good spirits when the emesis ceased for a few days. The dog was retained for observation for ten days, during which time he improved somewhat upon a milk diet and the usual gastric sedatives. No diagnosis of serious mischief was made, but the dog's general condition and occasional inappetence were not satisfactory features. Medicinal treatment along with a light milk and farinaceous diet was continued at home for a period of three weeks. At the end of this period, loss of condition, frequent vomiting and general depression were marked, and were now associated with periods of howling in the evening. The owner's description of the howling was suggestive of hysteria, but this was negatived on observation after re-admittance to hospital. From this time the dog became rapidly worse, and food had to be forcibly administered. Recovery appeared to be so remote that the owner consented to destruction. Post-mortem examination revealed a large ulcer in the duodenum, a little larger than a shilling, and at one point perforation was imminent. There was no other outstanding lesion.

This condition had never been encountered before, and was never suspected. The peculiar difficulties of diagnosis in this case are suggested by the inability to connect the vomiting with any definite period of time after a meal. There was no suggestive periodicity. The howling in the evening in the later stages when at home was probably due to pain occurring within an hour or two after the evening meal ; in the light of the post-mortem findings, this evidence of acute distress after a meal should have been suggestive, but after re-admittance to hospital no quantity of food was ever taken voluntarily, and in the latter stages only when forcibly given. Emesis occurred then at irregular intervals, and at the time was attributed to the forced feeding or to the prolonged period of disturbed gastric function. Abdominal palpation, while revealing a general diffuse tenseness, did not enable one to localise a definite area of pain. Diet and the usual medicinal agents in gastric disturbances did not yield more than temporary alleviation of symptoms. There is considerable doubt as to whether this was persevered with

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PLATE III.

FIG. 1.—Eight months old lamb affected with so-called Rickets. Note position of hind limbs.

FIG. 2.—Lamb affected with true Rickets. Note bent and curved bones of legs.

FIG. 3.—Another case of true Rickets. Note joint enlargements and curved bones of legs.

(Article by H. A. Vernon, *page* 512)

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during the time the animal was returned home. Neither diet nor drugs had any influence in the latter stages of the illness.

It would be of great interest if other practitioners would record their experiences when they encounter similar cases. A record of the train of symptoms might enable one to diagnose, or at least bring under suspicion, the possibility of duodenal ulceration before it is discovered on post-mortem examination. Surgical interference by way of an explorative laparotomy suggests a possible means of early diagnosis, and a gastro-jejunostomy as a means of alleviation or cure. Prolonged milk dieting and intensive alkaline medication would not be easy to secure in the dog in the majority of cases.

This specimen of the duodenal ulcer was exhibited at a meeting of the Yorkshire V.M. Association last year.

Abstracts of Current Literature

Immunisation Against Distemper.—Professor HINZ, Berlin. *Tierärztliche Rundschau.*

PROFESSOR HINZ, of the Tierärztliche Hochschule, Berlin, has kindly made available to us a copy of an article he is publishing in the *Tierärztliche Rundschau*, from which we have made the following extract.

Professor Hinz gracefully acknowledges his earlier scepticism about the Laidlaw-Dunkin method of immunisation, and his conversion. The successful immunisation of eight ferrets was described by him in the *Tierärztliche Rundschau* in 1931. Vaccine and virus was supplied in the early part of this present work on dogs by air post by Dr. Laidlaw and Major Dunkin, and later by Dr. O'Brien, of the Wellcome Physiological Research Laboratories. The observations refer to twenty-four dogs many months ago, and three others immunised too recently to be reported. After immunisation some of the groups were exposed to natural infection by contact in one instance with a group of fourteen dogs (half of which succumbed to a virulent infection), or by contact in a laboratory, or in the streets of Berlin. All the immunised animals proved to be completely immune. Professor Hinz concludes that but for some increase in temperature, the injection did not produce disturbances of health. The injection did not cause the production of typical distemper in any of the controls. The virus was old, and had perhaps dropped in virulence. Temperatures up to 40° C. were observed after virus alone, or vaccine followed by virus. Up to eighteen months later the immunised animals have remained free of infection. These favourable results agree with those obtained by him in former work in Berlin, in 1931, with ferrets. Professor Hinz concludes by recommending prophylactic inoculation in Germany to avoid

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the heavy loss caused in the past by distemper. Unfortunately, restrictions on the export of money from Germany for goods received may cause some difficulty in obtaining the materials from England. Perhaps the simultaneous method of serum and virus may prove cheaper.

[Needless to say, we welcome this confirmation by our distinguished German colleague of the efficacy of the Laidlaw-Dunkin method of prophylaxis, and of the material supplied from the Wellcome laboratories. The German dogs seem to have shown higher temperatures than are usually met with in England during immunisation. We remember being impressed with the " straight-line " curves shown by Laidlaw, and later by Dalling, when illustrating the tests which batches of vaccine for issue must pass : while unprotected control puppies showed the typical two bouts of high fever with a remission, the puppies which had received vaccine and were given potent virus a week later, showed no deviation from normal temperature, and thus gave a " straight line."

With regard to Professor Hinz's remarks on the simultaneous serum-virus method, we gather that Major Dalling is opposed at present to issuing this material for use abroad ; and that until further research reveals the explanation of the rare but disappointing failures with this method, he does not recommend its use in England. Many veterinary surgeons, who know the reservations which the authors of the method and Major Dalling make, continue to use—at their own risk—the simultaneous method, with which they have had good results.—ED.]

Artificial Impregnation of Bitches. By D. T. G. BEARD, D.V.M., Los Angeles. *North American Veterinarian.*

THE reasons for this means of impregnation of bitches with semen are threefold : (1) The primary reason that many male dogs are brought into the hospital for breeding a female is that the dog has not had experience, and does not copulate before he becomes exhausted. (2) Another reason is that too much time is required in trying to mate an inexperienced dog. Generally these dogs are of private families or neighbours which have decided to have their dogs bred. After trying to breed the dogs but failing, the owners bring the pair to the veterinarian for mating. After trying the arts of getting the two dogs to copulate we sometimes fail. (3) The other reason is that the bitch may not stand ; sometimes fighting the stud because she is not in full heat or too far out of season. The vagina may also be very narrow, in which case it should be well lubricated with neutral mineral oil before trying to breed either by natural means or artificially. Sometimes, especially in old females, little tumours prevent introduction of the dog's penis, and artificial insemination gives the required results.

Instruments necessary for artificial insemination are : One 30 c.c. glass hypodermic syringe, and one male catheter. The catheter and syringe are sterilised

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and kept warm, or to a heat corresponding to body temperature (101° F.) by keeping warm towels about them. The male is placed on the table and his penis is manipulated until he has an erection. The prepuce is pushed posterior to the bulb, and the hand is held tightly around and posterior to the bulbous penis, so that erection is maintained. The penis is then extended between the hind legs. The glass syringe is held in the left hand with the finger over the teat of the syringe, so that the semen will not escape. The semen is collected in the syringe with the plunger removed by holding the syringe near the glans penis until about 10 or 15 c.c. of the semen is gathered. Place the plunger in the syringe, keeping it warm with a warm towel. The bitch should then be placed on the table, and the catheter inserted into the vagina and as near as possible to, or into, the os uteri. The syringe should then be taken and attached to the catheter and the semen injected. After injecting the semen, hold the vulva closed with the fingers, elevating the subject's hind quarters for ten to fifteen minutes, so that as little of the semen as possible will escape. Gratifying results have been obtained from this method.

The Carriers of the Virus of the Bacillus of Gaertner and of Paratyphus B. in Cattle.—MIESSNER AND KOEBE.—*D.T.W.*, June 22nd, 1929, pp. 285–389. *Ex. Rev. Gén. de Méd. Vet.*, August 15th, 1932.

RESEARCHES have been carried out at the Institute of Hygiene of the Hanover Veterinary School as to the presence of the bacillus of Gaertner and paratyphus B. in cattle apparently perfectly healthy, or only showing slight symptoms of illness, and not being reported as ill from any internal trouble. Four cows kept in the stalls of the Institute harboured the bacilli of Gaertner, their presence being discovered from agglutination and cultures. In two cases the organisms were found in great number in the liver and gall-bladder, also in the contents of the uterus. They did not exist in the muscles or the milk. The carriers of the virus of Gaertner are not rare in bovines. The liver is the predilection seat of the bacteria which, eliminated by the bile, infect regularly the digestive tube. The carriers of the virus are dangerous in rearing; they infect the calves, and often give rise to grave and fatal enteritis. When there is an enzootic of enteritis in calves, or abortions, the agglutination test should be carried out on the cows, and all animals that give a positive reaction should be eliminated. In a Ruhr holding, where calves were frequently infected with the Gaertner bacillus, out of twenty-five bovines tested by agglutination, four proved to be carriers of the virus. One dairy cow supplying a hospital where an epidemic of paratyphoid had broken out continued to pass out paratyphoid B. after its transport to the Institute of Hygiene. Observed for several months, it did not present any symptom of illness; its weight increased from 1,020 lb. to 1,153 lb. The excrements, urine, milk and blood were submitted once a week to bacteriological and serological examination. The bacteria of Schottmüller were constantly encountered, and nearly in pure

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culture in the excrements. On the other hand, urine, milk and saliva always gave negative results. Repeated taking of uterine secretions almost always gave a positive result. The agglutinative value of the serum of the cow varies between 1 to 1,000 and 1 to 2,000. Complete bacteriological study clearly identifies bacterium paratyphi B. Schottmüller.

[This abstract shows the importance of cleanliness in milking, and the great care the veterinary surgeon engaged in the routine examination of milk cows should take as regards his own hands.—*Translator.*]

On the Occurrence of Febris Undulans in Danish Veterinarians. Summary of a Contribution to Elucidate the Pathogenicity of B. abortus Bang in Man. By AXEL THOMSEN, Copenhagen.

FROM previous investigations of the author it is evident that veterinarians are far more liable to infection with *B. abortus Bang* than are the members of any other occupational group in close contact with domestic animals (and their products). Up to the present, nevertheless, the diagnosis febris undulans has been made only in six cases amongst the veterinary surgeons in Denmark. All these six patients were young veterinarians who were taken ill shortly after they had commenced practising on cattle, that is, in abortus-infected stables. That the disease has not been ascertained amongst older veterinarians is quite in keeping with the fact reported by the author (and later confirmed by others), that nearly all veterinarians (*ca.* 94 per cent.) who have practised on cattle for more than one year, have specific antibodies against the *B. abortus Bang*, so presumably they are immune. The author points out that it is a very natural measure to try out vaccination of the young veterinarians before they commence practising. From the chronological distribution of the six cases of febris undulans observed in the veterinarians, one would expect to find a couple of cases in each class of young veterinarians that have graduated from the college.

With this possibility in view, the Serum Laboratory has sent questionnaires to all the veterinarians graduated from the college during the period 1915–1928 inclusive—a total of 325 veterinarians working in Denmark. Three hundred and twenty-four of these have filled in the detailed questionnaire. In these reports were thirty more or less doubtful cases, which have been reviewed by Professor Dr. V. Bie, who was unable to point out with any fair degree of certainty as much as a single case of febris undulans in this material. Considering the fact that veterinary surgeons are very much exposed to this infection, and further, that these persons are well versed in medicine, it is reasonable to regard this material as especially suitable for investigation into the question of the occurrence of febris undulans prior to the very latest years. Therefore, presumably, it is warrantable to look upon febris undulans as a new disease in this country—a disease that was unknown prior to 1925. The author then discusses the conclusions that may be drawn from this material as to the pathogenicity of *B. abortus Bang* in man.

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Reviews

Veterinary Pathology and Bacteriology. By S. H. Gaiger, F.R.C.V.S., and G. O. Davies, M.V.Sc., M.R.C.V.S., D.V.H. 1932. Pp. viii + 610, with 194 illustrations. London: Baillière, Tindall & Cox. 25*s*.

This book will be welcomed by students of veterinary pathology and bacteriology, for it certainly fulfills its object in catering for the requirements of such students in a concise manner, and so enabling them "to acquire the requisite knowledge without having to read widely." Much in the book will also prove of interest and value to those of us who have graduated, and who have not the time or opportunity to cope with the published literature on the various subjects. Had a full list of the references of the various articles and works made use of by the authors been published with the book, it would have appealed to those more deeply interested in some of the special subjects dealt with, and so filled another want in English veterinary literature. The volume is divided into three parts, with an appendix, and consists of some 610 pages in all.

Part I is labelled General Pathology, and deals with conditions ranging from degenerations to inflammation, and its results. There is also a chapter on tumours, with a very neatly compiled table summarising the various varieties met with in veterinary pathology. This part is well done, and could only have been written by a teacher who understands the requirements of the student. It contains in the short space of eighty-one pages all that the student requires on the subject of general pathology.

Part II deals with the bacteriology and pathology of the specific diseases of domesticated animals. The authors have seen fit to make use of the nomenclature of the American bacteriologists. Though many of us may fail to recognise some of the familiar bacteria by their new names, the authors have been wise in adopting the new terminology, for it will, sooner or later, throughout the whole world, take the place of the older and more familiar type; this work will do much to increase its popularity. This section consists of twenty-three chapters arranged in a manner which provides easy reading, the various sections dealing with any one disease condition following one another naturally. After dealing with the classification and general characters of pathogenic micro-organisms in one chapter, and the general principles of pathogenesis and immunity in another, the subsequent chapters of the section deal with the various families of bacteria, with special consideration of the characters of those causing diseases in animals, as well as the general characters of the diseases themselves and methods of immunity. In additional chapters in the section space is devoted to pathogenic fungi, protozoal diseases, and virus diseases, while a short chapter discusses diseases of uncertain ætiology (scrapie and grass disease), of which excellent descriptions are given, evidently from first-hand knowledge. Part II is certainly the most interesting section, and, on the whole, the most up-to-date literature on the various subjects dealt with has evidently been consulted. It must be almost impossible for the authors of a volume so comprehensive in nature to include all the latest available information on all subjects, especially as more and more research is being carried out every year, and the published articles are very numerous. We may be pardoned, however, if we point out a few of the several points on which more recent information might

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have been included. In dealing with coccidiosis of fowls (p. 317), the authors fail to refer to the excellent work of Tyzzer, in which it is shown that the chief cause of coccidiosis among growing and adult birds is *E. necatrix*, and that the damage done by this parasite may be great. Again, in writing on yellows in dogs (p. 296), no mention is made of the useful method of protecting dogs by the injection of vaccine consisting of attenuated or killed leptospira grown artificially. One more point which attracts our attention is in connection with the prophylactic measures adopted in lamb dysentery (p. 221). The authors mention that the prophylactic inoculation of ewes with toxin-antitoxin is " yet to be established." We believe we are right in saying that the toxin-antitoxin was superseded some years ago by formalinised whole culture, and that the statistical evidence published within recent times hardly justifies the statement that this method is " yet to be established." It is pleasing to note that diseases affecting poultry have been dealt with in so full a manner. The authors have by this work alone rendered a signal service to veterinarians whose knowledge on this subject is not always up to date. Much of the subject-matter contained in the section shows first-hand knowledge, and we are pleased to note that the authors do not hesitate to express their opinions on disputed subjects; for example, it is satisfactory to read on page 270 that " the value of tuberculin testing depends largely on the skilled observations of the operator."

Part III is devoted to special pathology, and the chapters deal with diseases of the various systems (circulatory, nervous, etc.). The descriptions of the diseases of the respiratory and urinary systems are particularly well written. This section contains much useful information for the veterinary student. A very useful table is that of the chief parasites found in the stomach and intestines of domesticated animals. The appendix deals mainly with laboratory technique, and is a useful summary of the essential methods practised in laboratories devoted to work on diseases of animals. Many useful hints are given, and in them can be traced the writings of an experienced laboratory worker. Workers new to laboratory work will profit by a careful perusal of this appendix.

We can recommend this book with confidence to students and to veterinarians who wish to refer to some of the essential features of pathological and bacteriological conditions met with in daily practice. Veterinarians in colonial and tropical countries will also find much useful information of special value to their problems. The illustrations are a feature of the volume, and to the publishers is due much credit for the pleasing way in which the volume is produced.

The Medicinal and Poisonous Plants of Southern Africa. By J. M. WATT and M. G. BREYER-BRANDWIJK, *University of Witwatersrand, Johannesburg.* Edinburgh: E. & S. Livingstone. 1932. Price 25*s.* net.

THE work is an account of the medicinal uses, chemical composition, pharmacological effects, and toxicology in man and animals, of Southern African plants. In the preface the authors point out that the country, with its wealth and variety of flora, has accumulated through the centuries a great mass of popular plant medicines, both native and European. Many of the plants are poisonous, but frequently precise knowledge regarding their effects is lacking. This applies especially to poisoning in man. The position is more satisfactory with regard to animal intoxications, and in this connection the authors pay tribute to the work of the veterinary section of the Agricultural Department of the Union. The aim of the work has been to

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gather together all the available information on the subject. Plants are arranged according to their botanical natural orders, and great care has been taken to include all the names by which the plants are known, including their botanical names, common names from European languages, and native names. In this connection the index is most complete. From a veterinary standpoint the most valuable feature of the work is the toxicology. Plant poisoning in animals is described in considerable detail, and in a number of instances symptoms are illustrated by photographs. Amongst the conditions dealt with, one finds: dikoor in sheep, cotyledon poisoning in goats, geeldikkop in sheep, cynanchum poisoning in horses and sheep, geigeria poisoning in sheep, and senecio poisoning in horses and cattle. No attempt has been made to describe the botanical characters of the plants, but the more important ones are illustrated by a number of excellent plates. One is struck by the enormous number of medicinal plants which grow wild in South Africa, the vast majority being unknown to English woods and hedgerows. Whilst the work is only of academic interest to the English veterinarian, it should prove of great practical value to those concerned with diseases of animals in the Union of South Africa.

J. G. W.

Recent Advances in Anæsthesia and Analgesia.—By G. LANGTON HEWER, M.B., B.S. London: J. & A. Churchill. Price 12*s.* 6*d.* net.

THE author makes it clear at the outset that the work is not intended to be a textbook on the art of anæsthesia, but that its object is to provide a concise collection of some of the important advances made during the past few years. He points out that the increase in complexity and severity of operations has demanded more and more from anæsthesia, and thus, this, like so many other branches of medicine, is becoming more and more specialised. Whilst the book is written for the use of the medical profession, there is much in it which is of value to veterinarians, particularly those chapters dealing with: pre-medication; synergism; basal narcotics; resuscitation; the use of CO_2; the drugs employed in local analgesia—general considerations and toxic effects; recent advances in the technique of local analgesia. The subject of anæsthesia is now receiving considerable attention from members of our profession, particularly those practising small animal surgery, and a careful study of the recent drugs and methods introduced into human surgery is bound to be helpful to us. The modest price of the work makes it available for everyone.

J. G. W.

Lehrbuch der Helminthologie. By DR. CURT E. W. SPREHN, *Professor of Parasitology and Applied Zoology at the University of Leipzig.* Berlin: Gebrüder Borntraeger, 1932. 1st ed. Pp. 998, 374 figs. in text. Price M. 90; bound, M. 96.

THIS book covers the whole field of helminthology very comprehensively, and gives special consideration to the medicinal side of the subject. The first portion of the volume treats of the life and natural histories of the helminths, the diseases which they cause, the diagnosis of the maladies, and measures to be adopted against the parasites. A chapter on helminthological technique completes the first part. The second part deals with the special natural history of the helminths, which is systematically arranged. In order not to make the book too bulky, only the helminths which

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play a medicinal rôle and affect mammals and birds in Germany are discussed, although what is known about them in other countries is incorporated in the text. There is a full list in 92 pages of mammal and bird hosts and the respective parasites that trouble them. Also at the end of the volume there is an alphabetical index of the species and types of helminths with their synonyms. The illustrations in the book are quite good, and many of them are fresh and original by the author. There is such a big array of parasites mentioned that one can hardly imagine that many of them have been omitted, but in the list of animal hosts we fail to see any mention of helminths affecting the guinea-pig. Six hundred and twenty-two pages of the book deal with the special natural history of each helminth, and each separate helminth is described under (1) synonmy, (2) diagnosis, (3) development, (4) animal or bird in which it occurs, (5) geographical distribution, (6) literature. We were interested to see if any fresh views had been created with reference to the prophylaxis against parasites, but found nothing in this connection that was not already known. Although in the human field parasitism, with few exceptions, is efficiently kept in check, it seems almost hopeless to expect that any commensurate degree of repression will be achieved in the animal domain. At any rate, until there is a greater recognition and intelligent awakening in real hygiene as it affects animals and birds, pastures, utensils, abodes, and entourage, no great advance will be made.

We have received a copy of "Notes on the British Pharmacopœia, 1932," by E. J. Millard, Ph.C., F.C.S., F.R.M.S., published by C. J. Hewlett & Son, Ltd., 35, Charlotte Street, E.C.2., the well-known veterinary chemists. It contains, amongst other information, important alterations and additions to the British Pharmacopœia, 1932. It is a useful little booklet, very well produced, and will be sent free to all qualified veterinary surgeons as long as the supply lasts. We strongly recommend every reader to write to Messrs. C. J. Hewlett & Son, Ltd., for a copy.

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